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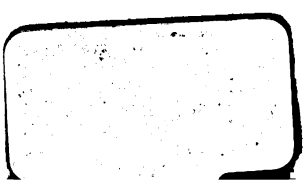


PUBLIC SCHOOL SERIES

FOURTH READER

He most lives
no thinks most, feels the noblest, acts the best.—BAILEY'S *Festus*.

W. ISBISTER & CO.
56, LUDGATE HILL, LONDON
1874

PREFACE.

THE same principle has been followed in this as in the preceding Readers of the series—to seek to develop the whole nature of the scholar, and not merely to load his memory with facts hard to learn, harder to remember, and often mere lumber of the brain, after all. That alone has been felt to be true education which stimulates the higher faculties to spontaneous activity, and, by leading the child to like his lessons, makes him fitter each day to understand them.

For this end the contents have been newly selected from the best writers for children, both English and Continental, very few of the pieces having ever appeared in a Reader before. Abstract topics have been avoided; knowledge given has been offered in the style most attractive to the young, and just thoughts and reflections set before them in such forms as cling to the memory by their beauty and simplicity.

Some special features may be noticed.

1. In accordance with the new requirements of Government, and to meet the growing demand for **Easy Scientific Lessons** in all schools, a series of **Lessons** on **Specific Subjects** is given. These Lessons will, it is believed, supersede the necessity of the children buying Manuals of the different sciences.

2. The **Vocabulary** will be found to give the *etymological meaning* of every word of importance, thus training the mind to an exact use of language and a habit of thoughtfully minute study of what is read.

3. The Vocabulary, and the spelling lessons throughout, are carefully divided for **Pronunciation.**

4. Questions are given on each lesson to aid the pupil in testing his knowledge of what he has read.

5. **Composition Exercises** may readily be framed by requiring the pupils to write out the answers to the questions in their own words.

6. **Short Passages from the Poets for Dictation from Memory** have been freely given, in the belief that the gems of thought and poetical beauty thus stored up in early life, will be a delight and benefit in riper years.

7. Formal **Dictation Lessons** have been avoided, as the most eminent educational authorities prefer using part of the ordinary text for Dictation. The space thus saved has been utilised for more important matter.

8. The **Outlines of British History**, which extend to the close of the Plantagenet period, will be found very full.

9. A very full **List of Prefixes** has been given to aid in training the pupils to an intelligent sense of the formation and force of the many English words of which they form a part.

10. **Object Lessons**, which are so interesting and instructive to the young, have not been omitted.

11. It is hardly necessary to call attention to the number and beauty of the illustrations. They have been selected with the aim at once of teaching by the eye, and of refining and elevating the taste.

12. Where the Reading Lessons seemed possibly too long for use at one time, an asterisk (*) has been inserted at the fittest point for their division. It has been the Editor's desire to make the book so complete, that the teacher may feel that, in asking any question, on any part of it, the child has the means of an intelligent answer provided for him.

The **Vocabulary** should by all means be learned by heart in easy lessons. Its definitions, to use Coleridge's figure, will be found full of hooks and eyes for the memory, in the pictorial vividness which etymological rendering gives them. It should also be used, with the spelling columns, for pronunciation.

INDEX.

* Poetry. † From the German, by the Editor.

		PAGE
A Lesson	*Dr. Norman Macleod*	93
†Abraham's Childhood	*Herder*	201
*Addison, Lines from		96
*A Good Name	*Shakspere*	89
Alfred's Youth	*T. Hughes, M.P.*	177
Ant and the Grasshopper	*Æsop*	109
Ant Slaves and Slave Masters	*Dr. Tristram*	160
Black Cocktail Beetle, The	*Wood*	191
*Commonwealth of Bees, The	*Shakspere*	29
*Contradictions, The Land of		129
DATES		131, 191
*Death Bed, The	*Hood*	155
*Death of the Old Year, The	*Tennyson*	204
Dog in the Manger, The	*Æsop*	207
†Duration of Life, The	*Grimm*	78
†Ears of Wheat, The	*Grimm*	128
ELLIPTICAL LESSON		38
ENGLISH HISTORY, OUTLINES OF		210–236
*Epitaph	*Ben Jonson*	119
*Evening Bells, Those	*Moore*	77
*Fidelity	*S. Butler*	82
†Friends, The Three	*Herder*	206
*Good Deed, A	*Shakspere*	94
*Greece	*Byron*	174
†Hans in Luck	*Grimm*	31
Hastings, The Battle of	*Dickens*	184
Hercules and the Waggoner	*Æsop*	75
*Home	*James Montgomery*	208
*Home, Sweet Home	*Payne*	26
Hornby, Captain William	*W. Martin*	164
Ice Plough, The	*Charles Kingsley*	99
Incident, An	*Dr. Norman Macleod*	126
LETTER, A		132
LESSONS ON SPECIFIC SUBJECTS—		
ANIMAL PHYSIOLOGY—		
The Build of the Human Body, I.		95
„ II.		96

PAGE

LESSONS ON SPECIFIC SUBJECTS—*continued.*

BOTANY—
Parts of a Flower 196–200

CHEMISTRY—
Elementary and Compound Matter 171

PHYSICAL GEOGRAPHY—
The Shape of the Earth 40
Distribution of Sea and Land 41
Continents of the Globe, The, I. 42
" " II. 44
" " III. 45
" " IV. 47
Atmosphere and its Vapours, The 49
Evaporation and Condensation 50
Dew, Mist, and Clouds 51
Rain, Snow, and Hail 53
Circulation of Water between Air and Sea . . . 55
Springs 56
Rivers and Streams 57
Winds 59

PHYSICS: MATTER and MOTION—
The Different States of Matter 134
The General Properties of Matter, I. 134
" " II. 136
Indestructibility of Matter 139
Measures of Space 139
" Time 140
Motion 141

PHYSICS: LIGHT AND HEAT—
Light, I. 142
" II. 144
Heat, I. 146
" II. 147
Melting 149
Boiling, or Ebullition 150

PHYSICS: MAGNETISM—
Attraction, Repulsion and Polarity 151
Lump of Coal, A . . . . . *Anon.* 64
Mary Scott . . . . . *Editor* 22
*Mercy . . . . . *Shakspere* 63
*Moore, Lines from 112
*Nelly Gray . . . . . *Hood* 175
*Night . . . . . *Southey* 21
*Noble Nature, The . . . . . *Ben Jonson* 170

PAGE

OBJECT LESSONS—

Dinner Table—
Knives and Forks, Iron, Plates and Dishes, Knife Handles, Pepper, Mustard, Salt, Plated Things, China ware, Linen, Bread, Yeast, Wheat, Wine, The Vine, Beer, Raisins, Currants, Oranges, Figs, Potatoes, Rice, Peaches, Melons 27–29
Tea, Coffee 82
Glass, Iron 84
The Library 130
Old Man and his Sons, The . . . . . *Æsop* 81
*Picket on the Potomac, The 110
Pied Piper of Hamelin, The . . . . . *Browning* 193
*Pleasures . . . . . *Robert Burns* 19
*Polonius's Advice . . . . . *Shakspere* 127
Pond in the Wood, The 113
Prairie Dog, The . . . . . *Major Bell* 180
†Rabbi Meir and his Wife . . . . . *The Talmud* 20
Riddle 38
†Rose, The . . . . . *Grimm* 30

SENTENCES TO BE CORRECTED 80

SENTENCES TO BE WRITTEN FROM MEMORY . 21, 29, 74, 94, 96

Sir W. Scott's School Days, Anecdote of . *Sir W. Scott* 84
*Skylark, The . . . . . *James Hogg* 108
*Some Murmur . . . . . *Archbishop Trench* 162
*Somebody's Darling . . . . . *Marie Lacoste* 18
*Song . . . . . *R. Herrick* 83
*Song, An Old English . . . . . *J. Heywood* 163
*Song of the North . . . . . *Anon.* 90
*Sonnet . . . . . *Wordsworth* 76
*Sower's Song, The . . . . . *Carlyle* 183
†Sparrow, The, and his four Children . . . *Grimm* 156
*Splendour, The, Falls . . . . . *Tennyson* 119
*The Banished Duke's Reflections . . . *Shakspere* 25
*The Golden Year . . . . . *Tennyson* 68
†The Little Word "Only" . . . . . *Anon.* 72
*The Mother and Child 39
Think of Others First . . . . . *Anon.* 69
*Thrush's Nest, The . . . . . *Clare* 179

VOCABULARY 251–272

Volcanoes . . . . . *Charles Kingsley* 120
Water, What, can do . . . . . *Canon Kingsley* 9
*We must be Free or Die . . . . . *Wordsworth* 94
*Wild Flowers . . . . . *Rob. Nicoll* 200
Wolf, The, in Sheep's Clothing . . . . *Æsop* 182

PAGE
WORD EXERCISES . . 76, 80, 89, 94, 162, 170, 190, 191, 193

WORD LESSONS—
Latin Prefixes 237
Greek Prefixes 243
Old English Prefixes 247
*Young, Lines from 96

INDEX OF AUTHORS.

ADDISON 96
ÆSOP 75, 81, 109, 182, 207
ANON 39, 64, 72, 90, 110, 113, 129
BELL, MAJOR 180
BROWNING, ROBERT 193
BURNS, ROBERT 193
BUTLER, SAMUEL 82
BYRON, LORD 174
CARLYLE, THOMAS 183
CLARE, JOHN 179
DICKENS, CHARLES 184
GRIMM, THE BROTHERS 30, 31, 78, 128, 156
HERDER 20, 201, 206
HERRICK, R. 83
HEYWOOD, T. 163
HOGG, JAMES 108
HOOD, THOMAS 155, 175
HUGHES, T. (TOM BROWN) 177
JONSON, BEN 119, 170
KINGSLEY, CHARLES 9, 99, 120
LACOSTE, MARIE 18
MACLEOD, DR. NORMAN 93, 126
MARTIN, W. 164
MONTGOMERY, JAMES 208
MOORE, THOMAS 77, 112
NICOLL, ROBERT 200
PAYNE, JOHN HOWARD 26
SCOTT, SIR WALTER 84
SHAKSPERE 25, 29, 63, 89, 94, 127
SOUTHEY, ROBERT 21
TENNYSON, ALFRED 68, 119, 204
TRENCH, ARCHBISHOP 162
TRISTRAM, CANON 160
WOOD, REV. J. G., M.A. 191
WORDSWORTH 76, 94

FOURTH READER.

WHAT WATER CAN DO.—*Charles Kingsley.*

scram-bling	**quag-mires**	**con-tin-u-al-ly**
un-der-mines	**Bourne-mouth**	**pinn-a-cle**
min-i-a-ture	**floes**	**growl-ing**

SEE how the mist clings to the points of the heather leaves, and makes drops. If the hot sun came out the drops would dry, and they would vanish into the air in light warm steam. But now that it is dark

and cold they drip, or run down the heather stems, to the ground. And whither do they go then? Whither will the water go,—hundreds of gallons of it perhaps,—which has dripped and run through the heather in this single day? It will sink into the ground, you know. And then what will become of it?

Now come to the edge of the glen, and I will show you the mist that fell yesterday, perhaps, coming out of the ground again, and hard at work.

You know of what an odd, and indeed of what a pretty form all these glens are; how the flat moor ends suddenly in a steep rounded bank, almost like the crest of a wave—ready like a wave-crest to fall over, and as you know, falling over sometimes, bit by bit, where the soil is bare.

Oh! yes, you are very fond of those banks. It is "awfully jolly," as you say, scrambling up and down them, in the deep heath and fern; besides, there are plenty of rabbit-holes there, because they are all sand; while there are no rabbit-holes on the flat above, because it is all gravel. Yes; you know all about it: but you know too that you must not go too far down these banks, much less roll down them, because there is almost certain to be a bog at the bottom, lying upon a gentle slope, and there you get wet through. All round these hills, you see the same shaped glens—the wave-crest along their top, and at the foot of the crest a line of springs which run out over the slopes, or well up through them in deep sand-galls, as you call them—shaking quag-mires which are sometimes deep enough to swallow

up a horse, and which you love to dance upon in summer-time. Now the water of all these springs is nothing but the rain, and mist, and dew, which has sunk down first through the peaty soil, and then through the gravel and sand, and there has stopped. And why? Because under the gravel and under the sand, there is an entirely different set of beds; and in those beds there is a vein of clay; and through that clay the water cannot get, as you have seen yourself, when you dug it out in the field below, to puddle the pond-head, and very good fun you thought it, and a very pretty mess you made of yourself. Well: because the water cannot get through this clay, and must go somewhere, it runs out continually along the top of the clay, and as it runs undermines the bank, and brings down sand and gravel continually, for the next shower to wash into the stream below.

Now think for one moment how wonderful it is that the shape of these glens, of which you are so fond, was settled by the particular order in which the gravel and sand and mud were laid down at the bottom of the sea, ages and ages ago. This is what I told you, that the least thing that is done to-day may take effect hundreds and thousands of years hence.

* But I must tell you I think there was a time when this glen was of a very different shape from what it is now; and I dare say, according to your notions, of a much prettier shape. It was once just like one of those Chines which we used to see at Bournemouth. You recollect them? How there was a

narrow gap in the cliff of striped sands and gravels; and out of the mouth of that gap, only a few feet across, there poured down a great slope of mud and sand the shape of half a bun, some wet and some dry, up which we used to scramble and get into the Chine, and call the Chine what it was in the truest sense, Fairyland. You recollect how it was all eaten out into mountain ranges, pinnacles, steep cliffs of white, and yellow, and pink, standing up against the clear blue sky: till we agreed that, putting aside the difference of size, they were as beautiful and grand as any Alps we had ever seen in pictures. And how we saw (for there could be no mistake about it there) that the Chine was being hollowed out by the springs which broke out high up the cliff, and by the rain which wore the sand into furrowed pinnacles and peaks. You recollect the beautiful places, and how, when we looked back down upon them, we saw between the miniature mountain walls the bright blue sea, and heard it murmur on the sands outside. So I verily believe we might have done, if we had stood somewhere at the bottom of this glen thousands of years ago. We should have seen the sea in front of us, or, rather, an arm of the sea; for the ridges opposite, instead of being covered with farms, and woodlands, and purple heath above, would have been steep cliffs of sand and clay, just like those you see at Bournemouth now; and—what would have spoiled somewhat the beauty of the sight—along the shores there would have floated, at least in winter, great blocks and floes of ice, such as you might have seen in the tide-way at King's Lynn

the winter before last, growling and crashing, grubbing and ploughing the sand, and the gravel, and the mud, and sweeping them away into seas towards the North, which are now all fruitful land.

QUESTIONS.—Where do the mist and rain go that fall on the hills and downs? How does the moor end? What do you see at the foot of the bank? Why does the water come out there? What was the glen once like? What was the sea like at the foot of the bank then?

PART II.

Am-er-i-ca	**pho-to-graphs**	**Mat-ter-horn**
Weiss-horn	**e-ter-nal-ly**	**ra-tion-al**

But what could change a beautiful Chine like that at Bournemouth into a wide sloping glen like this, with a wood many acres large in the middle of it?

Well now, think. Suppose the whole coast of Bournemouth were lifted up only twenty or even ten feet higher out of the sea than it is now. The coast of South America has been thus rising for ages. The west coast of Norway is now rising quietly—all that vast range of mountain wall and iron-bound cliff—at the rate of some four feet in a hundred years, without making the least noise or confusion, or even causing an extra ripple on the sea.

Now, if the mouth of that Chine at Bournemouth was lifted twenty feet out of the sea, one thing would happen,—that the high tide would not come up any longer, and wash away the cake of dirt at the entrance, as we saw it do so often. But if the mud stopped there, the mud behind it would come down more slowly, and lodge inside more and more, till the Chine was half filled up, and only the upper part of the cliffs continue to be eaten away, above the level where the springs ran out. So, gradually, the Chine, instead of being deep and narrow, would become broad and shallow; and instead of hollowing itself rapidly after every shower of rain, as you saw the Chine at Bournemouth doing, would hollow itself out slowly, as this glen is doing now. And one thing more would happen,—when the sea ceased to gnaw at the foot of the cliffs outside, and to carry away every stone and grain of sand which fell from them, the cliffs would very soon cease to be cliffs; the rain and the frost would still crumble them down: but the dirt that fell would lie at their feet, and gradually make a slope of dry land, far out, where the

shallow sea had been; and their tops, instead of being steep as now, would become smooth and rounded; and so at last, instead of two sharp walls of cliff at the Chine's mouth, you might have just what you have here at the mouth of this glen,—long slopes, with sheets of drifted gravel and sand at their feet, stretching down into what was once an icy sea, and is now a valley.

And there is a way of seeing if my guess holds good—that is to look at other valleys—in clay, in chalk, in limestone, in hard rock—and see whether my guess does not hold good about them too; whether all of them, deep or shallow, broad or narrow, rock or earth, may not have been hollowed out by running water. I am sure if you would do this you would find something to amuse you, and something to instruct you, whenever you wish. I know that I do. To me the longest railroad journey, instead of being stupid, is like continually turning over the leaves of a wonderful book, or looking at wonderful pictures of old worlds which were made and unmade thousands of years ago. For I keep looking, not only at the railway cuttings, where the bones of the old worlds are laid bare, but at the surface of the ground; at the plains and downs, banks and knolls, hills and mountains; and continually asking what gave them each it's shape; and I will soon teach you to do the same. When you do, I tell you fairly the answer will be in almost every case "Running water." Either water running when soft as it usually is: or water running when it is hard—in plain words, moving ice.

* But now, I see, you want to ask a question; and what is it?

Do I mean to say that water has made great valleys, such as you have seen paintings and photographs of,—valleys thousands of feet deep, among mountains thousands of feet high?

Yes I do. I never yet saw a valley, however deep, or a cliff, however high, which had not been scooped out by water; and even the mountain-tops which stand up miles aloft, in jagged peaks and pinnacles against the sky, were cut out at first, and are being cut and sharpened still, by little else save water, soft and hard.

Water, and nothing else, has sawn out such a chasm as that through which the ships run up to Bristol, between Lee Wood and St. Vincent's Rocks. Water, and nothing else, has shaped those peaks of the Matterhorn, or the Weisshorn, or the Pic du Midi of the Pyrenees, of which you have seen sketches and photographs.

If you ask me why all this has been done, the only answer I dare give to you is this, that whatever other purposes it may serve, it was made at least for this, that you and I should look at it and talk over it, and become, thereby, wiser and more earnest, and we will hope, better people. Nature does not speak to our eyes or to our brains, like Science, but to that inner part of us which we call our hearts and spirits, and which will endure when eyes and brain are turned again to dust. If your heart be pure and sober, gentle and truthful, then Nature speaks to you without words, and tells you things which

Science and all her pupils, the men of science, can never tell. When you lie, it may be, on a painful sick-bed, but with your mother's hand in yours; when you sit by her, looking up into her loving eyes; when you gaze out towards the setting sun, and fancy golden capes and islands in the clouds, and seas and lakes in the blue sky, and the infinite rest and peace of the far west send rest and peace into your young heart, till you sit silent and happy, you know not why; when sweet music fills your heart with noble and tender instincts which need no thoughts or words; ay, even when you watch the raging thunder-storm, and feel it to be, in spite of its great awfulness, so beautiful, that you cannot turn your eyes away: at such times as these Nature is speaking to your soul of souls, and saying, "My child, this world is a new place, and strange, and often terrible: but be not afraid. All will come right at last. Rest will conquer Restlessness; Faith will conquer Fear; Order will conquer Disorder; Health will conquer Sickness; Joy will conquer Sorrow; Pleasure will conquer Pain; Life will conquer Death; Right will conquer Wrong. All will be well at last. Keep your soul and body pure, humble, busy, pious—in one word, be good; and ere you die, or after you die, you may have some glimpse of things being as they are: and hear with the ears, not of your body but of your spirit, men and all rational beings, plants and animals, ay, the very stones beneath your feet, the clouds above your head, the planets and the suns away in farthest space, crying eternally—

"'Thou art worthy, O Lord, to receive glory and honour and power, for Thou hast created all things, and for Thy pleasure they are and were created.'"

QUESTIONS.—Where has the land been rising above its former level? How has it risen? How was the Chine made a glen? Name some glen you know? How have valleys been hollowed out? Tell some wonderful doings of water and ice in making valleys and mountains. Give the names of the mountains and valleys named. Where is each?

SOMEBODY'S DARLING.—*Marie Lacoste.*

A poem written during the great civil war in America, from April 11, 1861, to May 26, 1865. The authoress is a lady of Savannah, Georgia, and the incident was only too common in the Southern armies, as it is in all others, of all ages and countries, in times of war.

bay-on-ets	**en-shrined**	**bap-tized**
del-i-cate	**lin-ger-ing**	**wan-der-ing**

INTO a ward of the whitewashed walls,
Where the dead and the dying lay—
Wounded by bayonets, shells, and balls—
Somebody's darling was borne one day.
Somebody's darling! So young and so brave,
Wearing still on his pale, sweet face,
Soon to be hid by the dust of the grave,
The lingering light of his boyhood's grace.

Matted and damp are the curls of gold
Kissing the snow of that fair young brow;
Pale are the lips of delicate mould—
Somebody's darling is dying now.
Back from the beautiful, blue-veined face
Brush every wandering silken thread;
Cross his hands as a sign of grace—
Somebody's darling is still and dead.

Kiss him once for *Somebody's* sake,
Murmur a prayer soft and low,
One bright curl from the cluster take—
They were somebody's pride, you know.
Somebody's hand hath rested there:
Was it a mother's, soft and white?
And have the lips of a sister fair
Been baptized in those waves of light?

God knows best. He was somebody's love;
Somebody's heart enshrined him there;
Somebody wafted his name above,
Night and morn on the wings of prayer.
Somebody wept when he marched away,
Looking so handsome, brave, and grand;
Somebody's kiss on his forehead lay;
Somebody clung to his parting hand.

Somebody's watching and waiting for him,
Yearning to hold him again to her heart;
There he lies—with the blue eyes dim,
And smiling, childlike lips apart.
Tenderly bury the fair young head,
Pausing to drop on his grave a tear;
Carve on the wooden slab at his head—
"*Somebody's darling lies buried here!*"

PLEASURES.—*Robert Burns*, 1759-1796.

But pleasures are like poppies spread;
You seize the flower, its bloom is shed;
Or like the snow-flake in the river,
A moment white—then melts for ever!

Questions.—Who lay in the ward? How came they to be wounded? What do you think of war? What does the poet tell them to do with his hair? What else is to be done for him? What was to be put over his grave?

RABBI MEIR AND HIS WIFE.

From the Talmud.

in-struc-ted **hes-i-tate** **in-trust-ed**

Rabbi Meir, the great teacher, sat, on the Sabbath day, in the school of the law, and taught the people. Meantime both his sons died, both already grown to manhood, and well instructed in the law. His wife took them and bore them to an upper chamber, laid them on her bed and spread a white sheet over their bodies. In the evening Rabbi Meir came home. "Where are my sons," asked he, "that I may give them my blessing?" "They are gone into the school of the law," was her answer. "I looked round me," replied he, "and I did not see them." She set before him a cup,—he praised the Lord for the close of the Sabbath,—drank, and then asked again, "Where are my sons, that they also may drink of the wine of blessing?" "They cannot be far off," said she, and set before him to eat. When he had given thanks after the meal, she said: "Rabbi, allow me a question." "Say on," answered he, "my love." "Some time ago," said she, "one gave me jewels to keep for him, and now he asks them back again. Shall I give him them?" "My wife should not need to ask such a question," said Rabbi Meir. "Would you hesitate to give any one back his own?" "Oh, no," replied she, "but I did not like to give them back without your knowing beforehand." Soon after, she led him to the

upper chamber, stepped in, and took the covering off the bodies. "Oh, my sons," sobbed the father, "my sons!" She turned herself away and wept. At last she took him by the hand and said, "Rabbi, have you not taught me that we must not refuse to give back what was intrusted us to keep? See, the Lord gave, and the Lord hath taken away,—the name of the Lord be blessed;" and Rabbi Meir repeated the words, and said, "Amen."

QUESTIONS.—What was Rabbi Meir? What did his wife do with her dead sons? What did their father ask when he came home? What answers did his wife give? What question did she ask? What did his wife say when they went up to the room where their sons lay?

SENTENCES TO BE WRITTEN FROM MEMORY.

Dost thou love life? then do not squander time, for that is the stuff life is made of. Plough deep while sluggards sleep. Three removes are as bad as a fire. Never leave that till to-morrow which you can do to-day. Vessels large may venture more, but little boats should keep near shore. There never was a *good* war or a *bad* peace.

NIGHT.

How beautiful is night!
A dewy freshness fills the silent air;
No mist obscures, nor cloud, nor speck, nor stain,
Breaks the serene of heaven:
In full-orbed glory yonder moon divine
Rolls through the dark blue depths.
Beneath her steady ray
The desert circle spreads,
Like the round ocean, girdled with the sky:
How beautiful is night!

Robert Southey, 1774—1843.

MARY SCOTT.

com-pan-ion	**com-pa-ny**	**church-yard**
fa-vour-ite	**stag-ger-ing**	**house-hold**

CHARLIE SCOTT was the pride of the village school, he was so clever, and kind, and brave. He took the prize as the best scholar, and there was not one of the boys who could run or leap like him, or who was half such a nice companion, for he was full of fun and stories, and as cheerful as a bird.

After he left the school, Charlie was taken into the office of a lawyer who lived in the village, to be near a great man for whom he acted as agent. Charlie grew up to be a tall, fine-looking fellow, and every one said he would one day be a lawyer himself, and live in as large a house as Mr. Brown. By-

and-by he rose to have such a good income, and could afford to dress so smartly that he looked quite grand in the quiet streets.

There was a fine young girl in the village, which was a pretty large one. Her name was Mary Green. Her mother was a widow, but had kept her daughter at school till she was an excellent scholar, and had got her taught music as well, and made fit to be any one's wife. Charlie Scott fell in love with this girl, who was so pleasant-looking, so quiet, and so modest, that every one loved her.

After a while, when Charlie had enough a-year from his master to keep house for himself, they were married, and Mary Scott, of whom I am writing, was their first and only child.

For some time everything in the little household went on so happily that it would be hard to say whether the mother, or the father, or the dear little girl, was the most gay and cheerful. Their places in church were never empty on Sundays, and you could see them taking walks together in the pleasant evenings as if they were everything to each other.

But Charlie had always been a favourite with the young men of the place, some of whom were no better than they should be. Though he had given up keeping company with them when he married, they got him, after a time, to come again now and then to their meetings, at the village inn, to sing to them, and to have a night of it, as they said. Little by little, the liking to be there grew on him, and he got fond of the ale, until he could hardly do without it, and came to prefer the inn and the young men

to the quiet of his own home. Before very long he could drink as much as any one, and too often took more than enough, till he was seen, at times, reeling home the worse for it. You may think what his poor wife felt at all this. She pleaded with him, and got him to promise that he would give up his drinking companions, and you cannot tell how ashamed he was of himself, and how he vowed he would change. But the habit had grown on him, and he soon forgot his promises, and went back and back, till it came to be said—"Ah! poor Charlie Scott has taken to drink." He would now get angry with his wife when she spoke to him, and once he even struck her.

In the midst of all this she fell into poor health. Her red cheeks grew white and hollow, her shoulders began to stoop; only her eye seemed to grow brighter than ever. His master had seen the change in Charlie, for he was often absent nowadays, often blundered, and even came to the office only half sober,—so that he had been told that he must be sent away if this continued.

One night he had gone away with his companions to the next town, and had, as usual, been drinking. They started to come home after dark, and had got as far as the high place where the road skirts the hill, with a steep wall of rock on the one side. Poor Charlie, staggering along, went too near this, fell over, and was taken up dead.

His wife, you may be sure, was broken-hearted. The house that used to be so nice, had been stripped of nearly everything for drink, and she

was so ill that she could not work. So she went back to her old mother again with her child; and people said, as they saw her in her widow's weeds, so thin and white, that she would not be long here, and that her husband's drinking had killed her. Winter came, with its cold winds, and one day, after she had taken her little Mary tenderly in her arms, she kissed her, and prayed to the God of the orphan to take care of her when she was gone. Next week they carried away her body, and buried her beside her Charlie, in the village-churchyard, and that is little Mary in the picture, come out in the evening to sit on the grass of her mother's grave, and sing the little hymns she used to teach her. I believe she thinks her mother hears her.

If Charlie Scott had never tasted strong drink, she would not have been a fatherless and motherless orphan. Never let a drop of it within your lips, and then you will be safe.

QUESTIONS.—Who was Mary Green? What was her husband's name? What was her child's name? What signs of a happy family did they show at first? What bad habit did Charles Scott fall into? How did he die? What became of his wife?

THE BANISHED DUKE'S REFLECTIONS.

SWEET are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head;
And this our life, exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in everything.

Shakspere.

HOME, SWEET HOME.—*Payne.*

'Mid pleasures and palaces though we may roam,
Be it ever so humble, there's no place like home!
A charm from the skies seems to hallow us there,
Which, sought through the world, is ne'er met with elsewhere.
Home! home! sweet home!
There's no place like home!

I gaze on the moon as I trace the drear wild,
And I feel that my parents now think of their child.
They look on that moon from their own cottage door,
Through woodbines whose fragrance will charm me no more.
Home! home! sweet home!
There's no place like home!

An exile from home, splendour dazzles in vain:
Oh, give me my lowly-thatched cottage again;
The bird singing gaily that came at my call,
Give me these, and the peace of mind dearer than all.
Home! sweet, sweet home!
There's no place like home!

OBJECT LESSON.

DINNER TABLE. — Knives and Forks: — Of what are the blades made?

Of steel, which is iron specially prepared.

Where is Iron got?

It is found in iron-stone in the hills, and melted out of the stone.

Of what are the Knife-handles made?

Of ivory, which is got from the tusks of the elephant, or of horn from the heads of stags, or from the horns of oxen, or of the bones of different animals, or of wood.

Of what are the Plates and Dishes made?

They are made of fine clay, turned on the potter's wheel, and then baked in an oven, and made bright by melting a glazing mixture over them.

Where are they made?

Mostly in Staffordshire, at the Potteries.

What is Pepper?

It is the berry of a plant which grows in hot countries.

What is Mustard?

It is the seed of a plant which grows in England and elsewhere.

Where do they get Salt?

Some of it is made by boiling sea-water in large vats, but most of it is dug out of mines in the earth. There are great salt mines in Cheshire; but, indeed, there is hardly any country in which salt is not found.

How are Plated things made?

They are made by putting an article—say a salt-cellar or pepper-castor, made of some inferior metal, into a solution of silver, and then setting an electric battery to act on the solution, so that it throws down the silver on the inferior metal, coating it far more beautifully than would be otherwise possible, and far more cheaply.

Why does the China on the table get that name?

Because it was first brought from China.

Is it made elsewhere now?

Yes, in Staffordshire very fine china is made; and Dresden, in Saxony, has long been famous for making it.

Why was common pottery called *Delf*?

Because it was formerly brought from *Delft*, a town in Holland.

Of what is the Table-cloth made?

Of linen, which is made from flax.

Where does the finest flax grow?

In New Zealand.

Of what is Bread made?

Of wheat flour, in England; but in other countries, the flour of barley, rye, or peas is used, or oatmeal.

How is Bread made?

The flour is mixed with water, and yeast is then added to ferment or leaven it, and thus make it light and spongy.

What is Yeast?

It is a very small plant of the family of mushrooms, which grows in all fluids when they are fermenting. Yeast is just a mass of these little mushrooms, and when put in wetted flour, kept a

little warm, they spread through the whole of it, making it ferment by forming a gas which changes the state of the dough and forces itself through it, thus swelling it out.

What is done next?

The dough thus leavened is kneaded, made up into pieces of proper size, and baked in the oven.

Where does Wheat grow?

In all temperate climates, from Africa to the shores of the Baltic; in all Central Asia, and in the Middle and Northern States of America, and in Canada.

Is there any *wild Wheat?*

No. Wheat and all the corn-plants are grasses in a state of fruitfulness unlike any others. If left to run wild they sink into useless grasses again, and cannot be raised into wheat or corn any more. They are thus a special gift of God, made for the food of man, and kept in existence only by man's labour.

From what is Wine made?

From the grape, which grows on the vine.

Where does the Vine grow?

The limits of the growth of the vine are a little narrower than those of wheat.

From what countries do we get most of our wine?

From France, Spain, and Germany, Australia, and the Cape of Good Hope.

Did the Vine ever ripen in England?

It seems that it did at the time of the Conquest (A.D. 1066), for we read of it constantly in old chronicles.

How is Wine made?

The grapes are thrown into great vats, and then pressed till the juice runs out.

What is done then?

The juice is made to flow into other vats, where it remains till it ferments and turns into wine, which is then bottled and is ready for use.

From what is Beer made?

From malt, which is barley damped and let lie till it sprouts. It turns sweet as it does so, and it is then put into vats and boiled with hops. After that it is let stand till it ferments, and then it is fit for use.

What are Raisins?

Dried grapes.

Where do Currants come from?

From the islands in the Grecian Archipelago chiefly. They used to come from Corinth, and got their name from that city.

Where do Oranges come from?

They are the fruit of a low-branching evergreen tree, and first came from Asia.

Where do they come from now?

From the countries on both sides of the Mediterranean, and from the South of France, and from Spain and the Azores.

Where do Figs come from?

The South of Europe, Asia Minor, and the warmer parts of Asia; but they do not grow in the hottest parts. They grow also in Spain and in the South of France.

Is the Potato an English plant?

No; it was brought here in the sixteenth century, by Sir Walter Raleigh, from America.

Where does Rice come from?

It is a kind of grain that

grows in wet soils, in warm countries. It is brought from Carolina, in the United States, from India, and elsewhere.

Is it much used in any countries?

Yes; in India it is almost the sole food of millions, and it is used in great quantities in China.

Where did Peaches come from originally?

From Persia.

What are Melons?

A kind of cucumber.

Where do they grow?

They grow in hot-houses in England; but in the open air in Germany, France, and most warm countries.

What country is spoken of in the Bible as famous for its Melons and Cucumbers?

Egypt.

How long is it since the Cucumber was introduced into England?

About three hundred years.

Where did Melons come from originally?

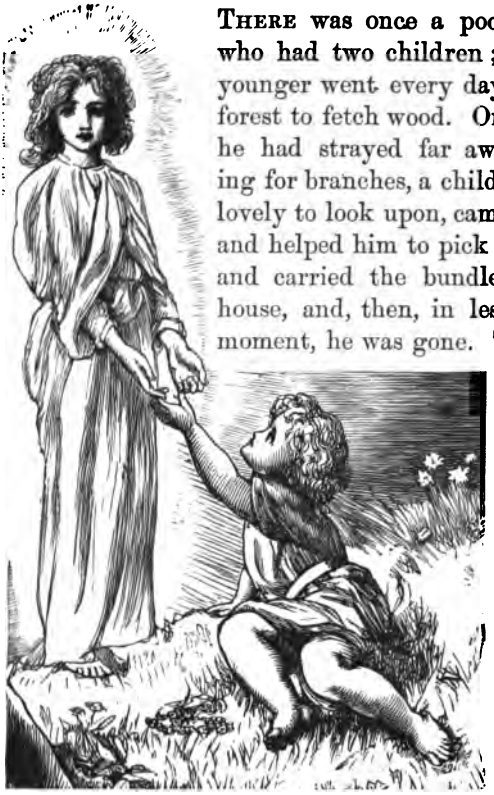
From Persia.

It is wonderful how much work we may do, even in a short life, if we are never idle.

COMMONWEALTH OF BEES.—*Shakspere.*

So work the honey bees;
Creatures that by rule in nature teach
The art of order to a peopled kingdom.
They have a king, and officers of sorts,
Where some, like magistrates, correct at home;
Others, like merchants, venture trade abroad;
Others, like soldiers, armed in their stings,
Make boot upon the summer's velvet buds,
Which pillage, they with merry march bring home
To the tent royal of their emperor,
Who busied in his majesty, surveys
The singing masons building roofs of gold;
The civil citizens kneading up the honey;
The poor mechanic porters crowding in
Their heavy burdens at his narrow gate:
The sad-eyed justice, with his surly hum,
Delivering o'er to executors pale
The lazy, yawning drone.

THE ROSE.—*Grimm.*



THERE was once a poor woman who had two children; and the younger went every day into the forest to fetch wood. Once, when he had strayed far away, looking for branches, a child, fair and lovely to look upon, came to him, and helped him to pick up wood, and carried the bundles to the house, and, then, in less than a moment, he was gone. The child told his mother of this, but she would not believe him. At last the child brought home a rose, and told his mother that the beautiful child had given it him, and had said that when the rose was in full bloom he would come again. The mother put the rose in water. One morning the child did not get out of bed, and the mother went to him and found him

dead; but he lay looking quite happy and pleased, and the rose, that morning, was in full bloom.

QUESTIONS.—How many children had the poor woman? What did the younger one do every day? Whom did he meet, and what happened? What did the beautiful child give him, and what did he say about it? What happened when the rose bloomed?

HANS IN LUCK.—*Grimm.*

hand-ker-chief	**tongue**	**pleas-ant-ly**
es-pec-ial-ly	**dis-mount-ed**	**leath-er**
mis-for-tune	**bus-i-ness**	**light-ened**

HANS had served his master seven years, and then said to him, "Master, my time is up; I would like to go home and see my mother." "Would you?" said his master. "Well, you have been a faithful servant; and as your service has been, so will your reward be," and gave him a great piece of gold. Hans took out his handkerchief, put the lump of gold in it, threw it over his shoulder, and set off for home. As he went along, setting one leg wearily before the other, a rider came in sight, who trotted along, fresh and joyful, on a lively horse. "Ah,"

said Hans, loud out, "riding is surely a nice thing! There he sits, as if he were in a chair, trips over no stones, saves his shoe leather, and gets on he hardly knows how." The rider, who had heard this, cried out to him—"Eh, Hans, what are you doing on foot, man?" "Ah, I must carry this lump home; it is gold, to be sure; but I cannot hold my head straight for it, and it hurts my shoulder." "I tell you what," said the rider, as he reined up, "if you like, we'll exchange: I will give you my horse, if you give me your nugget." "With all my heart," said Hans; "but I tell you you must carry it afoot." The rider dismounted, took the gold, helped Hans on the horse's back, gave him the reins fast in his hands, and said, "If you want to go fast, you must smack with your tongue, and call out, 'Hopp! hopp!'" Hans was glad of heart when he found himself sitting on the horse, and riding so pleasantly along. After a while he took it into his head that he would like to go faster, and he began to smack his tongue, and call "Hopp, hopp." The horse set off at a quick trot, and, before Hans knew, he was thrown off, and lay in the ditch at the roadside. The horse would have run on, had not a peasant who came along the road, driving a cow, laid hold of it. Hans picked himself up, and got up on his legs again; but he was very much shaken, and said to the peasant, "Riding is a poor joke, especially when one gets on a horse like this, which stumbles and throws, like to break one's neck. I shall never get on his back again. I tell you what, I think a deal of your cow. One

can go at his ease behind her, and he can have, besides, his milk, butter, and cheese sure every day. What would I give to have a cow!" "Well," said the peasant, "if you like I will exchange the cow for your horse." Hans agreed, with a thousand thanks, and the peasant swung himself on the horse, and rode off.

Hans drove his cow quietly before him, and thought of his lucky exchange. "If I have only a piece of bread, and I can't miss having that, I can, as often as I like, eat butter and cheese to it; and if I be thirsty, I need only milk my cow to have milk. Heart, what could you wish more?" When he came to an inn he made a halt, ate with great zest all he had with him, finishing both his dinner and supper in one, and treated himself to a half-glass of beer with his last two farthings. Then he drove his cow farther, towards his mother's village. But the heat grew more and more hard to bear, the nearer it came to noon, and Hans now found himself on a moor which stretched for full an hour's journey before him. He got very hot, and his tongue stuck to the roof of his mouth for thirst. "I can mend this," thought Hans, "I shall milk my cow, and drink the milk." He tied her up firmly, and put his leather cap below her for a pail; but milk as he liked, not a drop of milk came. Moreover, as he was clumsy at milking, the restless cow at last gave him such a kick on the head with its hind leg, that he tumbled backwards on the ground, and hardly knew where he was for a time. By good luck a butcher came along with a young

pig on a barrow. "What's the matter?" cried he, and helped up poor Hans. Hans told him what had happened. The butcher reached him his flask, and said, "There, drink and refresh yourself. Will the cow not give you any milk? No wonder; it's an old brute, that at best is fit only for drawing a cart or for beef." "Eh, eh," said Hans, and stroked down his hair, "who would have thought of that? Well, it's a good thing when one can kill a beast for himself that will give him flesh. But I don't think much of beef; it is not juicy enough for me. If I had only a young pig! That tastes very different; and then there are the sausages besides." "Listen, Hans," said the butcher; "to oblige you, I will exchange, and will give you my pig for your cow." "Thank you very kindly, my friend," said Hans, giving him the cow, and untied the pig from the barrow, taking the cord with which it had been tied in his hand.

Hans jogged on, and thought how everything went with him just as he wished, and how, if any misfortune befel him, it was made up the next hour. After a time a fellow came up with him who had a fine white goose under his arm. They passed a word on the time of day, and Hans began to tell him of his luck, and how he had made one good exchange after another. The good fellow told him in return how he was taking the goose to the baptism feast of a child. "Just lift her," said he, "and hold her by the wings, and feel how heavy she is; and yet she had been up for feeding for only eight weeks. Whoever gets a mouthful of her

when she's roasted will smack his lips." "Yes," said Hans, and weighed her in his hand, "she is heavy; but my pig will be heavy too by-and-by; she isn't a sow yet."

QUESTIONS.—What did Hans get for his seven years' work? What did he think when he saw the horseman? What happened to him when he was riding? What did he get for his horse? What happened to him with the cow? What did he give the cow for?

PART II.

knife-grind-er	**ter-ri-fied**	**light-ened**
pro-vis-ion	**whir-ring**	**con-tent-ed**

Meanwhile the fellow looked at the pig all over, shook his head well, and said, "I say, I'm afraid it's not all right about your pig. One was stolen from the pen of the justice in the village I have just left. I fear, I fear that's it you have. It would be a bad business if they take you with that pig in your hands. The very least would be that they would throw you into the dark lock-up." Poor Hans was terrified. "Ah! dear me," said he, "do help me out of this trouble. You know better how to do in such a case than I. Take my pig, will you, and let me have your goose?" "I shall have some risk to run," said the fellow; "but I won't let you have any cause of getting into trouble." So he took the cord in his hand, and drove the pig off, fast, up a side road; but the good Hans went on, lightened of his care, towards home, with the goose under his arm. "If I be right," said he to himself, "I have had the better of this exchange too; for first there is a good roast, then

the dish of fat that will run out of it will give goose-butter for my bread for a quarter of a year. Then there are the nice white feathers; I shall get a pillow stuffed with them, and shall fall asleep on it without rocking. How glad my mother will be!"

As he came through the last village, a knife-grinder was standing with his wheel, and sang at his whirring work—

"I sharpen the blades and I whirr like the wind,
And whatever will pay best is most to my mind."

Hans stood still and looked at him. At last he spoke: "You must be doing well to sing so at your work." "Yes," answered the knife-grinder; "a good trade is a mine of gold. A clever grinder is a man who finds money in his pocket as often as he puts his hand there. But where did you buy that fine goose?" "I didn't buy it, but got it in exchange for my pig." "And the pig?" "I got that for a cow." "And the cow?" "I got that for a horse." "And the horse?" "I gave a lump of gold for it as big as my head." "And the gold?" "Eh, that was my pay for seven years' work." "You knew how to do yourself a good turn each time," said the grinder. "Now if you could only manage to have it so that you could hear gold clinking in your pocket whenever you put your hand into it, you will have made your fortune." "How can I do that?" asked Hans. "You must be a knife-grinder, like me. You need nothing but a whetstone; all the rest they bring you. Here, you see, I have a whetstone only a

little the worse. I'll give it you for very little; I'll take your goose for it, if you like. Will you have it!" "How could you ask such a thing?" said Hans. "I shall be the happiest man in the world. If I had money in my pocket whenever I liked to use it, I could have nothing to care for." So he gave him the goose for the whetstone. "Now," said the grinder, as he lifted up a common heavy stone from the road near him, "here's a first-rate lapstone besides. You may hammer on that as hard as you like, and straighten your old nails. Take it, and use it along with the whetstone."

Hans took the whetstone and the lapstone, and went off with contented heart. His eyes shone for joy. "I must have been born lucky," he cried out; "all that I wish comes to me, as if I had been born on a Sunday!" Meanwhile, as he had been on his legs since daybreak, he began to get tired: hunger pinched him as well, as he had eaten all his provision at once, for joy at getting the cow. At last he could hardly get along, and had to stop every minute, and the stones grew heavier each step. The thought crept on him, how much better it would be if he had nothing to carry. He came at last, like a snail, to the side of a brook, and there he thought he would rest, and have a good drink, but that he might not do the stones any harm in his kneeling down, he laid them carefully beside him, on the edge of the brook. He now turned and was about to bend down, but he missed his foot a little—stumbled, and down went both stones, plump, into deep water. Hans, when he had seen them sink, sprang up for

joy, and cried out, with tears in his eyes, that he had had good fortune this time, above all, to get quit of his stones so nicely,—for getting well quit of them was the only thing that was wanting now to his luck. "There is no man so lucky as I under the sun," said he. With light heart, and free from all burden, he now sprang forward till he got to his mother's cottage.

I hope you will take the lesson from him, not to be so silly as get tired of everything so easily; not to be so changeable; and not to be so simple as to take every one's word about bargains they offer you, without thinking well over them in your own head, and using good common sense as you do so.

QUESTIONS.—For what did Hans give away the pig? What had the fellow with him who next met him? What did he say about the pig? What did Hans do? What did he say to himself about the goose? What came of the goose? What came of the stones? What lessons should you learn from Hans?

ELLIPTICAL LESSONS.

rap.	Be good enough to up this cloak, and
wrap.	bring it when I at the door for you.
sea.	The bishop's is in Africa; I should like
see.	to it, but it is far away over the .
sum.	He gave a great for these things, but he
some.	has long wanted of them.
strait.	The ship sailed in a course for her port,
straight.	through a narrow between the islands.
steel.	The farmer set a trap to catch the fox
steal.	that came to his chickens.
their.	That is not the field; horse has no right
there.	to be .
throne.	The Queen's robes were over the
thrown.	royal .

RIDDLE.

What shoemaker makes shoes without leather?

THE MOTHER AND HER CHILD.

BEHOLD a little baby boy,
A happy babe is he;
His face how bright,
His heart how light,
His throne his mother's knee.
His lips are red, his teeth are pearls;
The rogue, he has but two;
His golden hair
How soft and fair,
His eyes how bright and blue!
His tiny hands are white and plump;
And, waking or asleep,
Beneath his clothes
His little toes,
How cunningly they peep.

LESSONS ON SPECIFIC SUBJECTS.*

PHYSICAL GEOGRAPHY.

1. THE SHAPE OF THE EARTH.

1. In old times, men thought the earth was a great flat plain, and children still think it is flat till they are taught its true shape. It is not a flat surface, however, but round, like a ball or an orange.

2. This may be proved in many ways. For example:—

(1). If you stand on the ground, the houses and trees four or five miles off cannot be seen; but if you climb a hill, they rise again into sight, and the higher you mount, the wider becomes your view. In the same way, if you look at ships sailing out to sea from the shore, they soon sink out of sight; but if you climb to the top of a cliff, and look again, the same ships are once more seen, and you can watch till they sink a second time behind the waters. The reason why our range of view thus widens the higher we stand, is that the higher the point from which we look, the further we see over the round shape of the earth. People who go up in a balloon soon after sunset see the sun once more, from the same cause, as they rise, though it is out of sight on the earth.

(2). If you watch a ship approaching you over the sea, you will notice that only the tops of the masts are seen at first; that then, as it comes nearer, the sails rise as if out of the water, and that the ship itself comes into sight last of all, because it is lowest. So, when a ship is sailing away from you, the hull disappears first, then the sails, and at last the tops of the masts. This can only be because the sea, though it seems flat, is really arched so as to be part of the great circle of the earth's shape.

(3). Any one who has ever seen an eclipse of the moon, can see that the shadow of the earth, which causes the eclipse, is round, and only a round body can throw a round shadow. An eclipse of the moon is caused by the earth passing between the moon and the sun, so that the shadow of the earth's form is cast on the moon, as the shadow of an orange would be cast on the wall if we held one between the wall and a burning lamp or candle.

(4). The ships that make voyages round the world show that it is like a ball or an orange, for they sail as nearly as possible

* The subjects of these Lessons are those appointed by Government for the Fourth Standard. They should be used as READING LESSONS, and also studied section by section.

straight on, and yet come back to the port from which they set out. Voyages from England to Australia are made by sailing down the coast of Africa, round the Cape of Good Hope, and then eastward across the Indian Ocean. But voyages from Australia to England are very commonly made by sailing *still eastward from* Australia, across the South Pacific Ocean, round Cape Horn, and then over the Southern and the Northern Atlantic Ocean, till the ship reaches England again, after having sailed quite round the world.

(5). The earth is not a perfect round, however. It is flattened a little at the Poles, which are the parts at the very top and bottom of a map of the globe. These parts are nearly fourteen miles * nearer the centre of the earth than the Equator, or middle part, is. At the Equator itself, indeed, the earth is not perfectly round, its diameter being at one point two miles less than at another.

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2. DISTRIBUTION OF SEA AND LAND.

1. The surface of the earth is composed of LAND and SEA—the land being the parts of the world rising above the waters, which cover every other part.

2. Nearly three-fourths of the surface of the earth are thus hidden by a greater or less depth of water; the remaining fourt forming continents and islands rising to a greater or less height above the wide waters.

3. It is supposed that to fill up the awful hollows which hold the seas, and to make the world a smooth ball, not only would all the land now above their surface be needed, but a mile in depth besides, all over the earth. That is, the surface of the hard crust of the earth would then be a mile below the present level of the sea. There would thus be water enough to cover all the world, including the dry land, with an ocean at least a mile deep.

4. The dry land is not distributed over the surface of the globe in any uniform arrangement. On the contrary, if you take a school globe, you will find that you can turn it so that nearly all the land will be on one side, and nearly all the ocean on the other.

Thus the Land is nearly all on one half of the globe, while the other is nearly all Water. It is a curious result of this that the side of the world on which the Dry Land lies is heavier than the

* The exact results of the latest calculations make the polar diameter 27·47 miles less than the Equatorial. Herschel made it 26·478.

other or Watery side, by about eight times the weight of all the dry land on the globe. You can think how this is, if you remember that the watery side not only wants the hills and mountains of the other side, but has a vast hollow filled with water, while the land side is solid from the mountain tops to the centre.

5. A line may be drawn overland, without crossing water, from Sierra Leone, in Africa, across the Isthmus of Suez, to near Shanghae, in Eastern China. This is the longest continuous extent of land on the globe, measuring a third of its whole circumference. On the other hand, on a line drawn round the world, north, through the Atlantic, past Greenland, through Behring's Straits, and south, through the Northern and Southern Pacific Oceans, a ship might circumnavigate the world almost without seeing land.

6. There is not much land with land opposite to it on the other side of the globe, that is, antipodal* land. The north island of New Zealand is opposite Spain; Australia is opposite the middle of the Atlantic; the East Indies are opposite the plains of South America; and the southern part of that continent is opposite China and part of Tartary. Only a twentieth part of the land of the earth has land opposite to it, the rest has water on the other side.

7. This arrangement of the land and water on the globe has a great influence on the climate and characteristics of the land, and on the distribution of men, animals, and plants, and also on the currents of the sea, and on the direction and force of the winds.

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3. THE CONTINENTS OF THE GLOBE.

I.

1. Viewed as a great whole, the higher parts of the land of the globe girdle the Pacific and Indian Oceans. Beginning with South Africa, we have a great elevated region, or plateau, extending across the continent, from the Cape of Good Hope to the course of the river Niger, then stretching up its eastern side, and forming the highlands of Abyssinia. Next come the great table lands of Arabia and of Persia; next, the great table land of Asia, extending past the north of India to the north-eastern border of

* From the Greek words, *anti*, opposite to, and *pous, podos*, a foot. People at the *Antipodes* are, thus, people whose *feet* are *opposite to* ours.

the continent, and reaching out towards the vast mountain range of America, which, beginning at the Polar Seas, stretches down the west coast to Cape Horn. The steeper side of these vast elevated tracts almost always faces the Pacific and Indian Oceans. In Africa, the higher mountains are on the east side; the wonderful range of the Himalaya faces the Indian Ocean; and the vast range that runs down the two American continents slopes steeply to the Pacific.

2. The lowlands of the world stretch round the Atlantic and the Arctic Oceans. Thus, in the Eastern Hemisphere, the northern half of Africa is low along the Atlantic; then comes the great plain, on the west and northern part of Europe; then come the steppes of Asia, which reach along the whole northern half of that continent to the far east, skirting the Arctic Ocean.

In the Western Hemisphere, we find the Atlantic girdled by the great lowlands of North America, which stretch from the Arctic Ocean to the Gulf of Mexico, and, in South America, by the vast plains of the Orinoco, Amazon, and Paraguay rivers, and the Pampas to the south. The extreme north of North America is also low, along the edge of the Arctic Ocean. Australia, except on its eastern part, is a great lowland.

3. Round each Pole there is a great icy region. In winter, the sun is not seen for months together, and the cold is so great that the sea is nearly all strongly frozen over, the snow lying so universally on the landscape that it is almost impossible to tell where the land ends and the sea begins. The Antarctic or Southern Pole is much colder than the Arctic or Northern, and must present much the appearance our own land presented long ages ago, in what is called the glacial, or ice period. Voyagers who have navigated its seas, tell us that they sailed along a great wall of solid ice, unbroken and impenetrable, rising in some places from one hundred and fifty to three hundred feet in awful perpendicular.

4. The regions on the edge of the northern icy sea are barren, or covered with mosses and lichens. It is thus along the extreme north of Asia, America, and Europe. The soil throughout this vast stretch is permanently frozen to a great depth, all that the sun can do in summer being to thaw the surface to the depth of a few inches. There is no land in the Southern Hemisphere girdling in the icy sea in this way.

5. Stretching southward from this zone of barren land is the Temperate Forest region, which reaches, in North America, from the middle part of Alaska on the north-east, across the continent, to

the Atlantic, stretching to the south, across its breadth, on a line with the Northern United States and California. In the northern part of this vast forest belt the trees are mostly fir, pine, birch, aspen, larch, willow and alder; in the southern half the beech, the oak, the chestnut, the maple, and all other hard-wood trees flourish. In the eastern hemisphere we find the same characteristics reaching in a broad zone from Sweden and Norway in Europe, across the great plain of Siberia to the east coast of Asia. Hard-wood forests, separated from this great zone in position, are found also in Asia Minor and Western Persia.

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4. THE CONTINENTS OF THE GLOBE.

II.

1. Coming still south, a region of pasture land succeeds that of the great forests. In North America it takes the name of "prairies" and "savannahs," and forms vast tracts, destitute for the most part of trees, but covered with rich pasture, reaching in a broad belt from the edge of the forest land on the north—that is, from the line of Illinois and Iowa, with a bend northward at the Saskatchewan Valley—across the continent, over all the wide country drained by the Upper Mississippi, to the slopes of the Rocky Mountains, its southern limits extending nearly to the Gulf of Mexico.

In Europe, a large part of Southern Russia consists of such unwooded pasture land, called there "steppes," and passing thence into Asia, where it reaches across the whole of the northern part of the continent, between the high table land on the south and the forest zone on the north. It is over these illimitable plains that the Tartar* tribes wander with their countless flocks.

2. In the southern hemisphere, or the half of the world from the Southern Pole to the Equator, there is a belt of similar prairie or pasture land. The immense plains of South Africa, famous as grazing land; the great sheep and cattle pasture lands of Australia; and the wide "pampas" or plains of South America, extending from the mountains of Brazil to the deserts of Patagonia form this zone.

3. A great desert region succeeds the pastoral country in the

* This word should be *Tatar*. The European races in their horror at the Huns, when invaded by them, called them *Tartars*, as if they came from *Tartarus*—that is, from the bottomless pit.

northern hemisphere. In Africa, the greatest extent of such waterless and barren land anywhere found, is met with in the Sahara, which covers a space greater than all Europe, with dry, sandy, and stony ridges and plains. A great part of the Sahara lies slightly below the level of the Mediterranean; so that if a canal were opened from that sea into it, we should have a vast lake by which easy communication might be had with Central Africa. The great desert of Arabia comes next, as we go eastward, then the salt deserts of Persia, and others extending northward round the Caspian and the Aral seas, to the region of "steppes" or pasture plains. The "Thur," or Indian desert, which is a continuation of the Persian deserts, on the other side of the Indus, comes next; and finally, there are vast desert regions on the great table land of Asia, reaching through Mongolia to the borders of Manchouria, where they form the great Gobi desert. In North America there is a great region of barren waste, stretching from the neighbourhood of the Salt Lake, in Utah, to the north of Mexico. It is known as the great American desert.

4. A similar belt of desert is met with in the southern hemisphere. The whole of Central Australia belongs to it—vast treeless and waterless plains reaching far and near. In South America it reappears in the great deserts in the north of La Plata, on both sides of the central Andes, and in the barren and rainless coast-line at the foot of the mountains. In Africa there is the great Karroo desert of Cape Colony, the deserts on the Orange River, and the vast Kalahari desert which fills the central part of the south of the continent.

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5. THE CONTINENTS OF THE GLOBE.

III.

1. Between the equatorial regions and this great zone of desert there is another belt of pasture land. In Africa there are rich grassy, wooded, and arable countries to the south of the Sahara. India has a wide tract of similar soil; and in Thibet and Western China extensive pastures reach to the south from the great desert of Gobi; while in China proper wide regions are under high cultivation. This is in the north hemisphere. In the south hemisphere we have the rich lands of central South Africa, described by Livingstone and other travellers. In Northern Australia there are similar tracts, known as the "Plains of Promise;" and in South

Brazil and La Plata we find the vast pasture lands on which the immense herds of cattle, which are the wealth of those parts, feed.

2. Still approaching the Equator, we come now to the last central zone, known as the tropical regions. Vegetable life flourishes in it with a rank luxuriance unknown elsewhere. The whole of the centre of Africa, across the continent, from Senegambia to Southern Abyssinia on the north, and to the Portuguese province of Benguela and the Zambesi region on the south, belong to this zone. It is the region of the palm in all its varieties, of the coffee, the banana, the tamarind, the bamboo, and all other tropical trees and plants. The forests are so matted by undergrowths of vines, canes, ferns, and rank vegetation of all kinds, as to be nearly impenetrable, except where a path is cut. In many parts one has to walk over the thick herbage, which bears him up without his touching the ground, as at Fernando Po. The lowlands on the coast of Madagascar have this tropical climate, though the interior of the island is more temperate, from its elevation above the sea. Southern India and Ceylon, Siam, Burmah, and the islands of the Indian Ocean—Borneo, Sumatra, Celebes, New Guinea, and others—are also tropical. Part of the north of Australia is also of this character—very hot, and covered with dense forests, and the islands of the Central Pacific continue the zone towards the American continent, where it extends from Central America on the north to Peru and Brazil on the south, including in it the West India Islands. No part of Europe is in the torrid or tropical zone.

3. Some plants of great value to commerce grow in this region—that is, between the tropic of Cancer on the north, and of Capricorn on the south—but they also grow in the countries bordering on both. Cotton, for instance, and also sugar-cane, grow luxuriantly in the Southern United States; and cotton flourishes in Northern India, Northern Africa, and Asia Minor; even the southern parts of Spain lying within the cotton region. Tea grows only in regions bordering on the tropics, hardly in those within them. In the mountainous regions of tropical America barley grows at a height of 15,900 feet above the sea, and wheat at about 8,000; but in the Himalayas it grows at a height of 12,000 feet above the sea. Mountainous regions, in fact, reproduce, even in the hottest countries, as we ascend them, the trees and plants of every different zone, from the palm at their feet to the mosses and lichens of the Arctic circle, far up their sides, on the edge of the limit of perpetual snow, which in tropical America and Africa is at the height of about 14,000 feet; in Europe at about from 7,000

to 11,000 feet; and in Asia, at from about 10,000 to 14,000 feet above the sea. Strange to say, at the Equator the snow line is lower than at some distance north and south of it.

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6. THE CONTINENTS OF THE GLOBE.

IV.

1. The great forest region of the tropics lies in the zone of almost perpetual rain, or in the region bordering it on each side, where there are two rainy seasons—one in spring, and another in autumn—with a dry season between.

2. The great desert zone, on the other hand, lies in those regions where there is either no rain at all, or only in winter, with cloudless skies through the whole fierce summer. The forest regions of the temperate zone, again, are in regions where rain falls irregularly all through the year, though not in great quantities, or for long at a time. The excessive rain, and the sultry heat of tropical regions are thus both awanting.

3. The rainfall in different regions is, in great measure, the cause of the distribution of vegetation as we find it in its different zones. It is, however, a curious fact that the fall of rain depends in some degree on the presence and action of man; for where he cuts down the trees of a large district the rain-fall is greatly diminished, as has been found repeatedly in India and elsewhere; and where a large district is allowed to fall out of cultivation and lie desert, the same result follows; while the reclaiming desert regions by irrigation and cultivation brings the rain-fall back, or creates it where there was none before.

4. The region of deserts on the earth's surface, as may be noticed, lies just beyond the limits of the tropics. It is caused by the curious fact that, from the earth moving in a slanting direction round the sun—as is seen by looking at the ecliptic circle, or apparent path of the sun round the world—the country directly on the equator receives only a third part of that fierce perpendicular heat which a region bordering on either the northern or southern tropics receives; and this third comes during two separate seasons, with an interval of half a year between, during which the sun's rays are slanting. On the other hand, a region just outside the tropics has to bear the direct rays for more than seventy days continuously during the year. No wonder that all vegetation is burned up.

5. The Arctic regions, which are perpetually frozen, are made what they are by the feebleness of the slanting rays of the sun, or by its absence. But just as the warmest parts of the earth—that is, those which receive most of the direct perpendicular rays of the sun—are not on the Equator, but at some distance from it on both sides, so the region in which cold is greatest is not at the Pole, but in a circle at the same distance from it as the regions of the greatest heat are from the Equator.

6. In explanation of this, it is to be noticed that when it is summer at the North Pole the earth turns towards the sun in such a way that every part of the region within the Arctic circle lies in the full light and heat, night and day, for a longer or shorter period. At the Pole itself this unbroken sunshine lasts for six months; but its continuance grows shorter and shorter as you get towards the edge of the Arctic circle. Now the heat received by the regions close to the Pole during this half year of perpetual day must be very great, and some part of it very probably remains after the summer is over, so as to make the climate milder through the whole year, just at the Pole, than it is at a distance from it all round, where the shoulder of the earth, so to speak, casts a shadow each day, and breaks the continuity of the sunshine.

7. Only a very small part of the earth is as yet cultivated, and much of it never can be so. There are 52,000,000 square miles of land of one kind or another, but of this vast extent not fewer than 15,500,000 square miles are in the Arctic Circle, or in the great deserts of the different continents, or in the barren regions bordering the Arctic circle. More than a fourth of the earth's surface is thus for ever uninhabitable by man, to any great extent. The forests of the world cover somewhere about 12,500,000 square miles more, in the Tropical and Temperate Zones, so that more than half of the land surface of the globe is either waste or wood. Of the rest, a very large part consists of grass lands, such as "steppes," "prairies," "pampas," "savannahs," and "glades," of which only a very small part is as yet under cultivation. There is room in the world for untold millions more inhabitants than at present exist. The richest parts of the earth are, indeed, in many instances, the most thinly peopled, as, for example, the vast regions of northern Brazil, and great tracts of Asia, in which populous empires flourished in former ages, but which are now desolate. Mesopotamia, for instance, the seat of the ancient empires of Babylonia and Nineveh, now lies desert for the most part, and so do those vast regions devastated by Tamerlane and Ghengis

Khan in Central Asia, not to speak of the millions of miles of forest and prairie that have never been subdued by man.

7. THE ATMOSPHERE AND ITS VAPOURS.

1. The word atmosphere means the *sphere* or *round* of *air* which floats like an ocean over every part of the world. We cannot see it, but we feel it blowing on us, and we know what awful power it sometimes has by the effects of a storm, which is only the air in violent motion, striking against what comes in its way. The writer has seen a track made through the great forests of the far West by a strong whirlwind, which had rushed on so irresistibly that every tree, however thick, was twisted round and round, and broken across, near the ground, by it.

2. Air is composed chiefly of two invisible gases, called nitrogen —or the gas *which produces*, or *generates nitre*—and oxygen—or the gas *that produces or generates acids*. Besides these there is a very small proportion of another gas called carbonic acid gas, or the gas which is formed from *carbon* or *charcoal*. The proportions are about one part of oxygen to four of nitrogen. Carbonic acid gas forms only about one part in 2,500.

3. These gases are all so mixed one with another as to make the air we breathe everywhere the same. But besides these gases there is always in the air a large amount of **vapour** of **water**, that is, of the steam into which water turns when it is heated. You have often seen such steam rising in white clouds from a locomotive, or coming from the spout of a boiling kettle. The clouds in the sky are the very same kind of vapour or steam, rising from the surface of the earth and ocean. The air is always charged with a proportion of such watery vapour, which is necessary both for all living creatures and for all things that grow, for, without it, every green thing would be dried up, and living creatures could not breathe. The vapours everywhere in the air serve also to keep the heat which the earth receives through the day from the sun, from passing off through the night. In hot countries, where the air is very dry, and there is little vapour, the nights are much colder in proportion than they are in colder climates where the air is more moist. The vapours keep the heat from escaping from the earth during the night, and thus their abundance in cold climates makes the nights there comparatively warm, while their absence in hot countries makes the nights comparatively cool.

8. EVAPORATION AND CONDENSATION.

1. How the vapours in the air become visible may be seen by filling a tumbler in a warm room with very cold water. The outside of the tumbler is presently dimmed with a mist of watery particles, which forthwith begins to separate into small drops. Or it may be seen in the way the windows of a hall in which many people have met on a cold night, are soon covered with trickling drops of water on the inside.

2. The moisture on the tumbler or on the window-panes cannot come out of the glass, but must come from the air around. The cold of the glass, in the case of the tumbler, *condenses*—that is, makes *dense* or *thick*, the vapour floating in the air of the room; and in the case of the window-panes, the cold of the air outside has the same effect on the moisture floating in the air of the hall. The vapours in the air are always invisible till thus *condensed* by cold, as we see in the steam of boiling water, which is invisible inside the kettle, or at the mouth of the spout, but becomes white as soon as it is *condensed* by meeting with the cold air around.

3. It is clear from the fact of the tumbler and the window-panes becoming clouded with mist, and running with drops of water, by so small a degree of cold acting on the vapour near, that the colder the air the *less* invisible vapour can be in it, and that the warmer the air the more of such vapour may float in it. It is from this reason that the sky is so clear in summer, and that in the raw cold days of later autumn mists and fogs are so common. On cold frosty days in winter even the breath becomes visible as it leaves the lips.

4. Vapours rise in the air by what is called **Evaporation**, which means *turning into vapour*. All the moisture in the atmosphere is derived from the evaporation of water, partly from land, but mainly from the surface of the ocean. Evaporation goes on continually from the surface of lakes, pastures, corn fields, forests, and uncultivated tracts, as much water rising into the air in vapour from a newly-ploughed moist field as from a sheet of water of the same extent. On a warm summer day you may see this evaporation going on after a shower, the warm winds and the heat of the sun bearing off the water visibly from the steaming roads and fields.

5. Evaporation is of course more rapid on warm sunny days than in winter, and it is more rapid on a dry bracing day than on a

damp one, for the air can hold only so much moisture, and drinks up less when it is already more or less moist. The roads take very long to dry up in winter, but they dry very quickly in June.

6. As evaporation goes on continually all over the world, the mass of water thus raised into the air in invisible vapour is necessarily very great indeed. That which rises in a year from the Atlantic Ocean alone would make a solid mass thirty miles square.

9. DEW, MIST, AND CLOUDS.

1. When the vapours raised from the surface of the earth become visible in the sky we call them *clouds;* when they come nearer us, and hover on hill tops, or hang in valleys, they are called *mists* or *fogs*. When they fall invisibly in the evening and during the night, and rest in drops on the leaves and blades, we call them *Dew*.

2. All these—dew, mist, fog, or cloud—are thus only *condensed* watery vapour, formed exactly as we saw the mist formed on the cold tumbler. A mere dimness showed itself first; then the minute globules of water of which this dimness consisted, ran together into larger beads, and these again joined into drops which ran down the glass.

As the air cools from the absence of the sun, or from a cold current coming against a warmer one, the vapours floating in it are condensed, or *thickened* into a haze, and as the cold increases this haze runs into larger and larger drops; for haze is made up of small drops, and grows denser or thicker as the drops increase in size, forming clouds fleecier or darker as the drops are smaller or larger.

3. Dew. The name of dew is given to the moisture that falls in the evening and through the night, showing itself on all the leaves and blades of the landscape, in shining drops, in the light of the morning. It was thought in ancient times that, as dew falls only on clear nights, and as such nights are commonly cold, the moon, planets and stars pour down cold on the earth, and that this cold causes the dew. It shows how hard the true explanation of the simplest thing in nature is beforehand, even when it seems quite easy after it is once found out, that; although wise men were trying their best from the earliest ages to tell the cause of dew, it was not discovered till about sixty years ago (1814—1817). Dr. Wells, of London, then proved that dew was caused

by the condensation of the watery vapour of the air, on substances which have become cooled by the radiation* of their heat.

4. During the day, the earth, and all things on it, receive a large amount of heat from the sun, and this heat, when the sun has gone down, begins to radiate or ray off into the air, till leaves, stones, and all things get more or less cold, as they give out their heat more or less quickly. The same thing exactly then takes place as we saw in the case of the cold tumbler, and the moisture in the room; the cold leaf, or twig, or blade, or stone, *condenses* the vapour in the air and is covered with moisture, which soon gathers into drops, and, then, is seen as **Dew.**

5. Some bodies give out their heat more quickly and freely than others, and by thus being colder, have dew formed on them more readily. It is so with glass, which is wet with dew, when gravel, which gives out its heat slowly, has very little. This law explains all the differences in the fall of dew on different surfaces. The degree of temperature—that is the point on the scale of heat and cold, at which the vapour in the air begins to be condensed, is called the **Dew-Point.**

6. **Fog** and **Mist** are another form in which the unseen watery vapour always in the air becomes visible. They are often formed on hills and mountain tops by the passing over them of a warm moisture-laden wind when their heat has been given off at night, or when cloudy skies have kept the sun from warming them. When morning once more heats the surface over which these mists or fogs rest, or when the sun breaks out, they melt away. A river flowing from a cold to a warm region is often covered with fog, caused by its waters being colder than the air over them, and condensing the vapour in it; and, on the other hand, fog often rests upon a river flowing from a warm to a cold region, because the warm surface of the waters gives off more vapour than the air over it can hold, or from the coldness of the air condensing what thus rises. Meadows are often veiled with fog when a river flowing through them is free from it, through the earth giving off its heat so much more quickly than the water, that it falls to what may be called the Fog-Point, while the river is yet above it. Newfoundland, the Western Islands of Scotland, Iceland, and other regions, where there is often a great difference between the temperature of the land and of the moist air passing over it, are very much visited by fogs. In the northern Atlantic they are caused very often in

* Any body which loses heat is said to radiate it—that is, to send it forth from it *in rays*, as the sun sends forth its beams.

summer, by icebergs floating south from the arctic regions, and condensing the vapours in the warm air around them.

7. **Clouds** are the watery vapour in the atmosphere condensed by rising to higher and colder regions, or by cold currents of air coming in contact with it, for there are currents of colder or warmer air flowing like so many rivers, from time to time, overhead. The sky is clear at night because the clouds descend towards sunset, as the heat lessens, and are dissolved by coming into contact with the warm air near the earth. Evaporation growing less as the day draws to its close, and almost ceasing by night, the sky is often cloudless in the mornings. But as the day advances, vapours again begin to rise with the kindling sun, and the varied scenery of lighter or heavier clouds repeats itself anew, the thinner vapours rising high, the denser floating nearer the earth, according to the weight of water they contain.

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10. RAIN, SNOW AND HAIL.

1. **Rain.** You know how the vapour on the window-panes of a crowded room, gathers into smaller and then into larger drops, till at last it runs down to the sash below. In the same way the clouds, which are made up of drops of water finer than dust, grow darker and heavier by these small drops running together into larger, and still larger ones, till, at last, they are too heavy for the air to hold up, and fall through it as **Rain**, to the ground, washing the air from its impurities, and supplying the moisture needed for the growth of all vegetation.

2. The immediate causes of rain are various. It may be caused by clouds rising into colder regions of the air; by their drifting against a cold mountain peak, or by warm moist clouds being floated on air currents from the equatorial or tropical regions towards the arctic, or cold. Forests have a great effect in producing it, and hence, a wooded region grows each year more luxuriant, while an arid, treeless region, can hardly be changed to a wooded one, because the great heat of the naked soil, and the consequent dryness of the air over it, drive away the clouds that would have given it rain. There are also special causes in some localities, which are stated in section 4 below.

3. Some regions are nearly or quite rainless. On the coast of Peru, in the valleys of the rivers Colorado and Columbia, in North

America,—in the Sahara desert, in Africa, and in the desert of Gobi, in Central Asia, rain is almost unknown. On the other hand, the rainfall on the Khasia Hills, which are part of the Himalaya, on the North East of India, is no less than six hundred inches,—that is, fifty feet, a year! Five hundred inches fall there during the continuance of the South-West monsoons, or periodical winds, which last for seven months in the year. This is the rainiest district in the world. At Stye Head Pass, in the Lake District, the yearly rainfall is about two hundred and twenty-four inches; at Seathwaite, in Lancashire, it is one hundred and eighty-three inches. The wet winds of the Atlantic are the cause of this excessive moisture, for on the East Coast, which the clouds from the Western Ocean do not reach, the fall is only from twenty to twenty-eight inches.

4. The total want of rain in the Sahara is due, among other causes, to the fact that the winds prevailing there come from Asia, and expend much of their moisture before they reach it. It is the same with the great rainless deserts of Asia, the winds that blow over them having lost much of their rain before they reach them. There is a belt of almost continual rains, extending round the world a little north of the Equator, embracing part of Central America and of the north of South America, the regions on the line of Sierra Leone in Africa, and some of the islands and regions of the Far East. Bordering on this zone comes another, in which the rainy season is periodical, as in Brazil on the South, and India on the North of the Equator.

5. **Snow** is moisture frozen in the air by cold winds. The flakes are composed of minute six-pointed crystals of ice, of a thousand beautiful forms. The white colour of snow is caused by the blending together, in the snow crystals, of rays of all the prismatic colours which make up light, white being the colour of unbroken or perfect rays of light. When looked at separately, the crystals exhibit different colours.

6. Snow is about ten or twelve times lighter than water, so that when it falls evenly, the quantity of rain it represents is about a tenth of the depth of the snow.

7. Snow is of great use in many ways. A great amount of heat is given out from the moisture in the air, as it passes into snow, and thus the air itself is made warmer than it otherwise would be. When the snow has fallen, it protects the soil and the seeds and plants in it from cold, as it does not let the heat escape readily; or, in other words, it is a bad conductor of heat. The ground

beneath snow is often from twenty to thirty degrees warmer than the surface of the snow itself; sometimes, indeed, even forty degrees warmer.

8. Red Snow and Green Snow have been met with in different parts, especially in the Arctic regions. They are caused by the presence of minute vegetation of these colours.

9. Hail seems to be simply frozen rain drops, the varying sizes of the hailstones being apparently caused by a number of frozen drops being refrozen into a lump as they strike against each other in passing through the air. This is the simplest explanation, but it is questioned by some whether it accounts for all the facts seen in connection with hail storms. A sudden rush of very cold air through a portion of the atmosphere laden with moisture, is doubtless the ordinary cause.

10. Hailstones are sometimes of great size. In India, they are often as large as pigeons' eggs; and not a few weigh as much as a pound. In 1832, a mass of ice fell in Hungary about a yard in length, and two feet in thickness. In England, hailstones, though occasionally larger, are generally about the size of peas.

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11. CIRCULATION OF WATER BETWEEN AIR AND SEA.

1. How is it, that notwithstanding the vast amount of water raised from the ocean, and from lakes, by evaporation, they seem as full as ever after ages? The only answer must be, that as much water comes down from the air by the condensation of vapours into dew, rain, snow, &c., as rises into it. But how is this balance maintained?

2. The quantity of rain which falls upon the sea, must be much greater than that which falls on the land, because there is about three times more sea than there is land. The loss by evaporation from its surface is thus made up in part, but this is not the only way in which water returns to it.

3. The average depth of the yearly fall of rain in England is about thirty-one inches, so that if it all fell continuously, and remained on the ground, the whole country would be two feet and a half under water by one year's rain. How vast, then, must be the quantity of rain that falls over the whole land surface of the globe in a year, for England is very dry, compared with many countries.

Part of this amazing volume of water returns to the air in the shape of vapour, to make the clouds, mists, and rains, once more; but the greater part of it soaks into the ground and becomes rills and brooks, which, again, unite to form streams, and these, once more joining, form rivers, flowing into the sea.

There is thus a constant circulation of water, between the air and the ocean, earth and sky receiving back in turn, so exactly, what each has already given to the other, that all things remain for ever, evenly balanced.

4. But all the water that falls on the earth, and is not evaporated, does not run off in surface rills and brooks. Much of it soaks into the earth, and if it remained there, would soon make the land into a great marsh, while the sea would be robbed of much that had risen from its surface in vapour. It finds its way, however, to the ocean in **Springs** which feed the brooks and rivers.

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12. SPRINGS.

1. You have perhaps seen well-diggers at work, and have noticed how they puddle and lute, that is, coat, all the shaft of the well with clay, before they begin to build it round with stone. They do this because, since water cannot get through the clay, the supply in the well will thus be kept from soaking into the soil at the sides. This clay luting, or puddling, explains how springs are formed, for it is just by such beds of clay or some body equally impervious by water, meeting and turning aside the waters of the surface as they soak down through the ground, that springs are caused. The rain sinks down and down till a bed of clay, or a sheet of hard rock, stops its further descent, and turns it which-ever way a course offers for it. If any chink be near it will make its way through it, enlarging it as it flows, and will work its way along till at some point it regains the surface as a **Spring**. Some rocks, though very hard, are so full of fractures and "joints," as they are called, that water finds no difficulty in making a channel through great beds of them. Others are full of great cracks, and even of wide clefts and caverns, and of course these form natural water-courses.

2. You will now see how a spring bursts forth at a spot where there is no water near. The water that forms it has soaked down through the sides of some hill, perhaps far off, till it came to some

bed of clay or of hard rock which stopped it, and it has since crept on over the clay or rock, forcing its way by every crack or opening, till it reached a spot where, on the bottom or side of a valley, the bed over which it had run comes to the surface, and then, of course, it pours out over it.

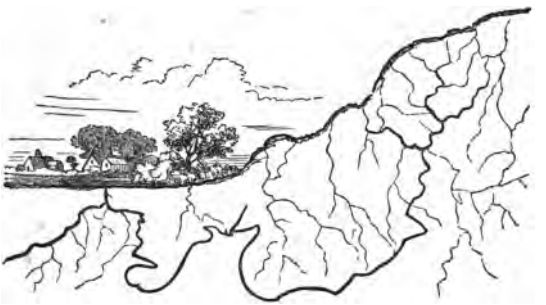

Fig. 1.

3. Springs do not always find a straight course to the surface, however. As in the cut above, the water which forms them sometimes trickles down countless cracks in the body of the mountains on whose surface it fell as rain, to a great depth, before meeting any rock or bed which stops its way. Pressed by the weight of the water still falling through the course it has itself come, it must move, but can find no other channel, perhaps, than through fissures that lead it to the surface again, and thus it comes up, and bursts forth as a spring; for water, as you know, will always rise as high as the level from which it flowed at first, and this spring came from the heights of the mountains above.

13. RIVERS AND STREAMS.

1. If you could look down from a great height on the course of a river, you would see the broad flood in which it poured itself into the sea dividing, as you turned inland, into a number of streams, and these again would be seen branching into countless brooks, and silver threads of tributary waters. If you could draw the picture of a great tree on the ground, it would thus be the very counterpart of a river, for, first, you would have, in both,

the broad trunk, then the wide-spreading branches, and from these, again, the countless boughs and sprays and twigs.

2. The beginnings of the greatest rivers are therefore some little brooks in the mountains. Thus the river Danube rises as a spring in the mountains of Baden, 3,000 feet above the level of the sea. The river Jordan, on the contrary, bursts forth from the foot of one of the spurs of Mount Hermon as a spring of great volume, the collected drainage of the Lebanon mountains thus finding an outlet. The streams and rivers of any country generally flow in opposite directions from a common dividing line, which is called the *watershed*. Thus, in South America the rivers on the one side of the Andes flow into the Pacific; those on the other, into the Atlantic, and the Alleghany range, in North America, forms the watershed of the streams which, on the one side, flow into the Mississippi valley, and on the other into the Atlantic.

3. The region drained by the brooks and streams which join to form a river is called the **Basin** of the river, and is often very large. Thus Humboldt estimated the territory drained by the Amazon at 3,000,000 square miles. The size of a river depends on three things—the surface of the *basin* which it drains, the number of springs in the basin, and the quantity of its rainfall. Some rivers have a very slight descent, as, for instance, the Amazon, which falls only ten and a half feet in 600 miles; others, like the Jordan, have a very steep descent in their course. The Jordan, indeed, owes its name—The Descender—to this feature.

4. Rivers are largely fed by springs, so that they do not depend for their fulness on local surface rains, if the basin they drain be large. Such a river as the Amazon flows on for ever in much the same volume, though rivers which drain limited areas are affected by long-continued drought, which dries up the springs by which they are fed. Some rivers which rise in snowy mountains are fuller in summer than in winter, their stream depending to a large extent on the water of the snow when it melts in the hot months. The Rhine, in this way, rises as summer advances, and falls in winter.

5. The river systems of the different continents are determined by the mountain ranges which decide the course of the streams, and supply the springs which feed them. They are thus of the greatest value to man, for without mountains and hills there could be no rivers, and without rivers the earth would be uninhabitable.

6. The Alps, in Europe, show how mountain chains create river systems, and, through them, fit countries for human abode

and prosperity. From the valleys which face the north flow the countless streams which at last unite to form the great rivers Danube and Rhine. From the valleys facing the west flow the headwaters of the Rhone, the Saône, the Isere, and other rivers, and from the valleys facing southwards stream the thousand tributaries which enrich the plains of northern Italy, and unite to form the great river Po. Thus, the history, the civilization, and the social condition of the nations of central Europe, have, in reality, been greatly determined by the influence of the Alpine chain, which has made these countries what they are by the streams and rivers with which it has watered them.

7. The Alps form the **Watershed** of a great part of central Europe; that is, the *water sheds* itself in opposite directions from their opposite sides. Sometimes, however, the watershed of a country is not so marked, and can be ascertained only by noticing where the streams begin to flow in opposite directions. Thus, the sources of the Ohio, the James River, and the Potomac are close together in the Alleghany Mountains, and are so nearly on a common level that the fact of some brooks, which afterwards form the Ohio, flowing westward towards the Mississippi, while the brooks that become the James and the Potomac flow eastward, towards the Atlantic, is almost the only indication that the watershed is where we thus find it. In the same way the watershed of the country between Perth and Inverness, in Scotland, is only ascertained, as one passes through the district by railway, from noticing that at one point the waters flow *towards* you, and that they presently flow in the *same direction* you yourself are travelling. The watershed of a country is thus the ridge which parts its waters down its opposite slopes.

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14. THE ATMOSPHERE.—WINDS.

1. The earth, as we know, is surrounded by a great crystal ocean of air, resting on its surface, as the waters of the sea do on the heights and hollows of the ocean bed, and reaching high over our heads, wherever we go.

The air or Atmosphere was thought for many ages to be an "element," or simple, uncompounded body. Its true composition was found out only in 1774, by Lavoisier, the great French chemist.*

You will find it given in section 7, par. 2, page 49.

* Guillotined in 1794.

2. From the duration of twilight, it has been calculated that the atmosphere reaches about forty-five miles above the earth; but other grounds of calculation have led philosophers to think it extends to a height of one hundred or even two hundred miles. It is, however, very much lighter and thinner in its upper regions than at the surface of the earth; for it has been found, by noting the degree in which air grows lighter as we ascend, that the portion resting over the level of the sea is four times denser, that is, heavier, and closer pressed together by the weight of the air above it, than air at seven miles up; and that that air, again, must be four times heavier than the air fourteen miles above the sea level. The highest portions of the atmosphere must, therefore, be very thin and light indeed. At the surface of the earth its weight is very great, amounting to nearly a ton on each square foot, which is equal to a pressure of about fourteen tons on the body of a man of ordinary size. You may wonder why such a weight does not crush us to the ground; and so it would, but that there is an equal outward pressure of elastic fluids within the body, which neutralizes it so completely that we are not only able to bear it, but are unconscious of its resting on us.

3. The air on the surface of the earth is exactly suited for our breathing; but if we ascend to any great height, its increasing lightness and thinness soon make themselves painfully felt. At the height of twenty-four to twenty-six thousand feet breathing becomes very difficult, and the diminished pressure on the body causes the blood to force its way through the small blood-vessels near the skin.

4. The oxygen in the air is the great support of human life and of the life of animals. All living creatures draw it into their bodies with each breath, and give out, in exchange, carbonic acid gas, which is fatal to life if it be breathed. It might be feared from this, that, after a time, the atmosphere would have all its oxygen consumed, and be poisoned by so many millions of men and creatures of all kinds breathing out air into it, which would kill them if they had to breathe it in again. Yet the air is as perfectly suited to our wants to-day as in past ages. The explanation is found in the wonderful fact that plants live upon the carbonic acid gas which living creatures breathe out, and that they drink it in just as we do oxygen, and thus keep the air from being poisoned by it. Not only this: they breathe out and reject the very gas, oxygen, which is the life of all living creatures, so that plants live on what would kill men or animals, and men and animals live

on what plants cannot use, but give off into the air. A perfect balance is thus maintained, and the air is kept always in the same condition.

5. **Winds.** The great air ocean over us, like the wide ocean of waters that girds the dry land of the globe, is never perfectly at rest, but rocks and undulates even when we say it is calm. And as the sea has currents, flowing, like rivers, in their channels, so has the air, and these currents we call **Winds.**

6. The cause of all winds, whether the gentler or the more stormy, is that air when it is heated expands, that is, swells and grows light, and hence rises, leaving a space beneath, into which heavier, that is, colder air, immediately rushes, to fill up the empty space. You see the same law in the draught caused by a fire in the chimney. The heated air escapes up the chimney-shaft, and is immediately replaced by cold air, which, in its turn, becomes heated, and rises in the same way, and thus a steady flow of air, that is, a *wind*, is created *to* the fire and *from* it. Rooms, also, are ventilated by acting on this law. As the heated air rises and escapes through the ventilator at the roof, cold air flows in below, through any openings that may offer, so as to make a current, or wind, perpetually circulating, and renewing the air in the apartment.

7. As the earth turns on its axis day by day, the parts which are most exposed to its heat, that is, those parts which are called the Tropics, become greatly heated, and, as a consequence, the air over them expands very much, and loses much of its weight, so that it ascends, and would leave an empty space, if the air north and south of this heated region did not at once rush in to fill up the vacuum. How great the expansion, or *swelling out*, of air is, when it is heated, every one has seen who has noticed how a boy's india-rubber ball, if only half-filled with air, becomes full at once when held to the fire; or how an empty bladder, all wrinkled and hollow, fills presently when it is made warm. The little air in it is made to swell so much as to fill the whole bladder.

The steady heating and ascending of the air at the Tropics, and the flow of cooler air to fill the empty space, is the reason of the **Trade Winds**, which are winds that blow constantly in the same direction. They are a great blessing to sailors, bearing vessels along for great distances at a steady rate of from five to six miles an hour.

8. The heated air which rises in the Tropics, and is replaced by colder air from the northern and southern regions, itself flows

away towards the north and south, to fill up the empty space left there by the cold winds having travelled towards the Tropics. There is thus a constant current near the earth towards the Equator, and another higher current flowing over this lower one, in the opposite direction, that is, away from the Equator. But by the time this heated air gets far north and south, it, in its turn, gets cold, and falls towards the earth again, part of it making the common westerly winds of the northern and southern Temperate Zones. So wonderful a circulation is there in the great air-ocean!

9. The **Monsoon** winds are caused, in the Northern Hemisphere, by the land of central Asia and of North America becoming greatly heated by the sun between the months of April and September. The colder air rushes in from all sides to fill the space left by the hot expanding air as it ascends. In the Southern Hemisphere, they blow in an opposite direction, to supply the vacuum left on the heated surface of Africa and South America. These winds are called Monsoons (or *periodical* winds) in the East, but that name is not used elsewhere, though winds rising from the same cause blow elsewhere. They prevail most in the northern Indian Ocean, where they blow from the south-west from April to October, and from the north-east for the rest of the year.

10. The **Hot Winds** of Africa, known as the Samiel (*poisonous wind*), the Sirocco (*east wind*), the Simoom (*hot, poisonous wind*), the Harmattan, and the Khamsin, are the same wind under different names. It always blows directly towards the coast from the interior of the continent, and passes in a strange advance from Egypt along the north and west coasts during the year. It blows in Egypt in May and June; in Algeria in July; in Eastern Morocco in July, August, and September; in Morocco, on the Atlantic, in September—the ground becoming so hot while it lasts as to burn the feet. Passing along the west coast, it blows at the Gulf of Guinea at intervals from December to February. There are other hot winds, less famous, in various hot countries.

11. **Whirlwinds** are caused by two winds, which are moving in opposite directions, coming into contact as they pass each other. The stronger wind whirls the other, and is itself whirled, in the direction of its course.

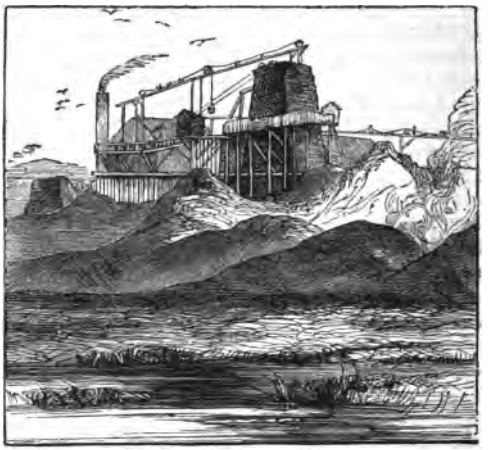
Hurricanes, Typhoons, Tornadoes, and **Cyclones,** are different names for whirlwinds of vast sweep, which move with great speed and awful destructive power. They occur mostly in some

parts of the tropical regions. The hurricanes of the North Atlantic begin in the calm parts which lie between the north-east and south-east Trade winds, and whirl, in a great bend, first north-west, over the West Indies, and along the coast of Florida; then round to north-east; but they usually die out before they reach Britain, towards which this course leads them. Typhoons is the name given to similar hurricanes in the China Sea and the Bay of Bengal. Tornadoes is the name given to whirlwinds on land, on the west coast of Africa, and in America. When violent, they sweep away great trees and strong buildings; indeed, almost everything in their course.

These awful wind storms move slowly onward in their path, the centre of the tempest advancing at a rate of only a few miles, generally from four to seven, rarely over fifteen miles, an hour. But this gives no measure of the intensity of the storm, or of the terrific force of the wind as it whirls round and into its centre. It rushes on in its awful circling at from eighty to one hundred miles an hour, rising at times to one hundred and twenty or one hundred and thirty, a speed beyond conception terrible in such a case.

MERCY.—*Shakspere.*

The quality of mercy is not strain'd;
It droppeth as the gentle rain from heav'n
Upon the place beneath. It is twice bless'd:
It blesseth him that gives, and him that takes.
'Tis mightiest in the mightiest; it becomes
The throned monarch better than his crown:
His sceptre shows the force of temporal pow'r,
The attribute to awe and majesty,
Wherein doth sit the dread and fear of kings;
But mercy is above this sceptred sway,
It is enthroned in the hearts of kings;
It is an attribute to God himself;
And earthly power doth then show likest God's,
When mercy seasons justice.—We do pray for mercy
And that same prayer doth teach us all to render
The deeds of mercy.



A LUMP OF COAL.—*Anon.*

sol-diers	**grad-u-al-ly**	**horse-tails**
crop-ping	**kin-dled**	**bright-ness**
sun-beams	**yel-low**	**through-out**
per-fum-ers	**coun-tries**	**croc-o-diles**
pic-tures	**wil-der-ness**	**mauve**

In winter time, when you gather round the fire, to look for castles and soldiers, and pretty pictures of all kinds in it, or to listen to stories from your mother or father as they sit beside you, did you ever think where the coal came from?

It is dug up out of mines, in this and other countries, for, through the goodness of God, coal is found in nearly every part of the world. Far away in the icy north, where winter now reigns throughout the far greater part of the year, coal is found cropping out of the river banks; stores of it are laid

up in countries as yet without people, for the use of long future ages.

You think that coal is a kind of stone that burns. Well, it looks like a stone, but what will you say when I tell you that it is made of the leaves and trunks and stems of trees and mosses, crushed into a hard mass by the awful weight of the rocks that gradually gathered over them. There is often earth among these remains of plants and trees, as you may see from the brown ashes, left after bad coal has been burned. They are just so much of the earth in which the trees or plants grew.

All the coal you now burn once grew as great woods, of strange trees, or still stranger mosses, which must have been as high as trees. Altogether, between three and four hundred kinds of plants have been found in the coal of England alone. They are mostly ferns and pine-trees, or trees something like these, and a kind of reed like the horsetail you find growing in wet places. But everything grew very thick and high when the coal was being made, and thus, though our horsetails are very small plants, these old ones had stems fourteen or fifteen inches round, and grew to a height of thirty or forty feet. The ferns of those days were very plentiful, and rose to be trees, instead of being the humble plants our ferns are.

There were very few living creatures in the woods of these ages, and the woods themselves were a dark green, cheerless, wilderness of rank growths. Frogs, serpents, and crocodiles glided among the fern swamps, but there were no men then, for all this

took place long before man was made: indeed, man could not have lived on the earth in those days, for it was not yet ready for him.

But how is it that the coal burns as it does? Let me tell you a great wonder. The coal is just a great prison of sunbeams, and when you set fire to it the sunbeams are set free, and you get the light of days that shone ages on ages ago, to cheer and warm you now! Plants drink in the light and grow by its help. It takes all the sunshine of a long summer to make the leaves and blossoms you see in a year, and to add one thin ring of wood to the trunk and branches of a tree; and you may think how many years it must have taken to grow flowers and leaves and trees enough to make all the coal there is, after they had been squeezed so small and close, and how much light of the old sunshine of the days when they were growing must be shut up in the black lumps we burn. A coal fire is just so much sunshine kindled again into brightness, after lying hid in the coal, far down in the earth, for ages and ages.

But this is not all the wonder in a piece of coal. Where are all the colours of the flowers and leaves, if the coal be made of them? Just look into the fire. Do you see these red and yellow flames? They are the very colours of the old flowers that helped to make the coal. Look at the bright green and blue, and mauve and magenta, and rose and yellow ribbons, on the ladies or on the girls around you. Where do you think most of these colours come from? They are got from the tar that oozes out of coal when it is heated, and they are nothing

but the bright lovely colours of the old old flowers and leaves. But how did the leaves and flowers get these lovely colours? They drank in the colours of the old old sunshine, which was just the same then as it is now, and you see in the rainbow what that is; and all these colours are just the rainbow colours of the light that made the summers when these flowers and leaves were growing. But where is the sweet smell of these old old flowers? Why

you can buy it at the shops, if you like; for some of the sweetest perfumes that we have are made from coal, and are just the perfume of the buds and blossoms that waved in the summer light ages of ages of ages ago.

If you think on all this it will be well.

QUESTIONS.—Where is coal found? Of what is it made? How many plants are found in coal? Of what kinds are they chiefly? What plants are they like, of those we know? What creatures lived then? What are the colours of the flames? What are the colours of the dyes? What are they got from? What are the light and heat of coal? Is the smell of these old flowers to be had yet?

THE GOLDEN YEAR.—*Tennyson's Songs.*

We sleep and wake and sleep, but all things move;
The Sun flies forward to his brother Sun;
The dark Earth follows wheel'd in her ellipse;
And human things returning on themselves
Move onward, leading up the golden year.

Ah, tho' the times, when some new thought can bud,
Are but as poets' seasons when they flower,
Yet seas, that daily gain upon the shore,
Have ebb and flow conditioning their march,
And slow and sure comes up the golden year.

When wealth no more shall rest in mounded heaps,
But smit with freër light shall slowly melt
In many streams to fatten lower lands,
And light shall spread, and man be liker man
Thro' all the season of the golden year.

Shall eagles not be eagles? wrens be wrens?
If all the world were falcons, what of that?
The wonder of the eagle were the less,
But he not less the eagle. Happy days
Roll onward, leading up the golden year.

Fly, happy, happy sails, and bear the Press;
Fly happy with the mission of the Cross;

Knit land to land, and blowing havenward
With silks, and fruits, and spices, clear of toll,
Enrich the markets of the golden year.

But we grow old. Ah! when shall all men's good
Be each man's rule, and universal Peace
Lie like a shaft of light across the land,
And like a lane of beams athwart the sea
Thro' all the circle of the golden year.

THINK OF OTHERS FIRST.

dif-fi-cul-ty	**un-sel-fish**	**in-creas-es**
sac-ri-fice	**per-son-al**	**in-dul-gence**
ex-cess-ive	**ex-trem-i-ty**	**A-lex-an-der**
de-struc-tion	**pri-va-tions**	**ex-haust-ed**
gen-er-ous	**sur-geon**	**ex-er-tion**

NOTHING is harder, and nothing is more noble, than to think of others rather than of ourselves. Even in trifles we are apt to think of our own pleasure rather than that of others, and the difficulty of being unselfish increases with the value of the sacrifice required. Instances are not wanting, however, of noble self-denial, even in the most extreme cases, as, for instance, where personal suffering, or even the demands of life, seemed to excuse indulgence. No agony, it is said, is greater than that of excessive thirst, and yet some have been known who have handed to others, in their own direst extremity, the cup of cold water which they might themselves have drunk. Nor has it been only the common pangs of thirst that have thus been endured; some have even resisted the aggravations

added by fever, wounds, or the deadly faintness of approaching death.

Thus it is related of Alexander the Great that

when he was marching back his army from the Indus, after having conquered Asia, the route taken led them through a terrible desert called Gedrosia,* on the shores of the Persian Gulf. I hope you will look in the map to see exactly where these places are. On the left was the salt sea, under their feet an endless waste of sand and gravel, and on their right towered ranges of mountains of bare red stone. Over all a cloudless sky oppressed them with sweltering heat, from which there was no escape. Nothing could save the whole force from destruction but the greatest exertion, that they might get through this fearful region before they sank under its horrors. Alexander shared all the hardships

* Now called Mekhran. The cut illustrates an incident in the Crimean war.

and privations of the march, and was greatly exhausted by them. One day when, like the whole army, he was ready to sink with heat and deadly faintness, a little water was brought him in a soldier's helmet. It had been got with great difficulty, and was tempting beyond measure. But he declared that it was too precious for him to drink it, and that his doing so would only make the thirst of his soldiers the greater, by their seeing him take it, and he therefore poured it out on the ground as an offering to the gods, to win their favour for the whole host. Who can doubt but that such generous regard for others gained him the love of all his men.

The case of Sir Philip Sidney was still more striking. He had been mortally wounded at the battle of Zutphen, in Holland, and was being taken to the rear to let the surgeons try if anything could be done for him. Being faint with loss of blood—for his thigh was broken—he asked for a drink of water, which was at once brought him; but as he was putting the bottle to his lips a poor wounded soldier just then being carried past chanced to look at it with wistful eyes. The gallant Sidney, seeing this, in a moment stretched out the bottle to the poor man, without himself taking any of it, saying "Your need is greater than mine." Even in his agony he thought of the poor common soldier rather than of himself.

QUESTIONS.—Where was Alexander's army? What kind of place was it? What continent had he conquered? What happened to him? What did he do with the water? At what battle was Sir Philip Sidney wounded? How was he wounded? When they gave him water, what did he do?

THE LITTLE WORD "ONLY."—*German. Anon.*

sov-er-eign chintz leg-a-cy cer-tain-ly

Mrs. George. What brings you so early, neighbour?

Mrs. Dash. I have a favour to ask of you, neighbour.

Mrs. George. A favour! If it is in my power to oblige you, I am sure I shall do it.

Mrs. Dash. It's only a trifle I have to ask—that you will be so kind as lend me a sovereign.

Mrs. George. ONLY a sovereign!

Mrs. Dash. ONLY a sovereign. I've seen a chintz in the town—such a darling chintz!—lilac, with white flowers. To be sure, I can't say I need it; but it is such a beautiful chintz!—such a beauty! And it is so very cheap! Think, neighbour; it costs ONLY four and sixpence!

Mrs. George. ONLY four and sixpence?

Mrs. Dash. ONLY four and sixpence. Perhaps I may even get something on that; but I must have it.

Mrs. George. Indeed?

Mrs. Dash. I am sorry that I have to trouble you; but the times are so hard, one can hardly get the few sorry shillings together one needs for clothes, living, and expenses. But I expect the money from my legacy to-morrow, and then I shall repay you with thanks.

Mrs. George. Then you got something left you by your father?

Mrs. Dash. Yes, I did; but it was so small it is not worth mentioning.

Mrs. George. How much was it, then?

Mrs. Dash. ONLY twenty-five pounds.

Mrs. George. ONLY twenty-five pounds?

Mrs. Dash. No more, neighbour.

Mrs. George. Now I shall willingly lend you the money; but I must ask you to hear a story which may bring you a legacy of twenty-five pounds a year if you think over it well.

Mrs. Dash. Indeed? Pray let me hear it.

Mrs. George. Did you know the goldsmith's widow that lived over in the corner yonder?

Mrs. Dash. That I did. She has just died in the workhouse.

Mrs. George. And she once had a deal of money, neighbour; but a little word brought her to be a beggar.

Mrs. Dash. A word! How can that be?

Mrs. George. Yes, a word—a single word; a very little word.

Mrs. Dash. What could it be?

Mrs. George. I shall tell you. In the first place, she always thought everything very cheap. If she came home in the forenoon from market, she was always in high spirits; for she had got everything for next to nothing. The chickens cost ONLY two shillings—the butter ONLY the same. She was in high glee when she had thus spent ONLY ten or twelve shillings. How much does the chintz cost, neighbour?

Mrs. Dash. The chintz? The chintz? They ask four and sixpence for it.

Mrs. George. Yes, that's it. My memory fails me at times. The good woman had, besides, the weakness of thinking any money she might get ONLY a trifle. She sold her garden for ONLY a hundred pounds, her wine brought her ONLY eighty pounds, and her house ONLY a thousand pounds. She was glad when she had got rid of it. But you know neighbour, that she soon had nothing left. That awful word ONLY! Yes, that ONLY!

Mrs. Dash. That ONLY. I see what you mean.

Mrs. George. How much shall I lend you, neighbour?

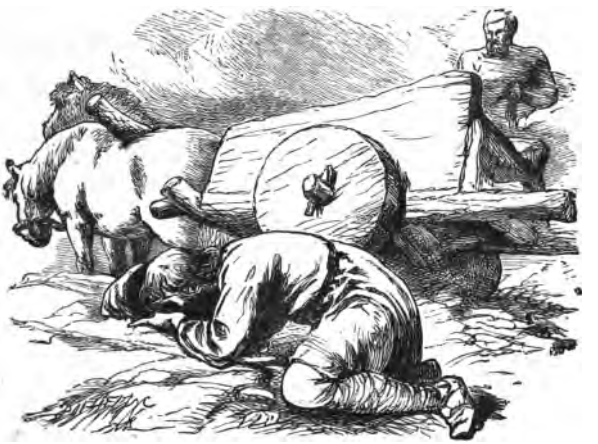
Mrs. Dash. Ah, dear neighbour, I shall let the chintz go. The story about the widow is very sad. Good day, neighbour. Don't take it ill of me.

Mrs. George. Certainly not. If I can at any time help you I shall be glad. Good day.

WISE SAYINGS.

He who digs a pit for others falls into it himself. A lie hurts him most who tells it. If you don't want to get floured, don't go into the mill. Better alone than in bad company. Clean and whole make poor clothes shine. Silks and satins often put out the kitchen fire. What is right for the one is fair for the other. Many feathers make a bed. No

misfortune is so great but it has a blessing in its bosom. He who seeks friends is worthy of them; he who has none deserves none.



HERCULES AND THE WAGGONER.

wag-gon-er **Her-cu-les** **bawl-ing**

As a great strong fellow was driving his waggon along a deep miry lane, the wheels sank on one side into a deep rut, so that the horses could not pull them out, do as they would. The waggoner whipped them and scolded, but it was of no use. On this he gave up in despair, and fell on his face crying to Hercules, the god of strength, to come and help him out of his trouble. But Hercules did

not at all like this lazy way of doing; so he came, and instead of at once lifting the waggon out of the rut, as he could easily have done, he asked the waggoner what he did lying there bawling for help, without doing anything. "Put your own shoulder to the wheel, and do your best," said he, "and then call on me; if I see that you need my help after that, I will give it you. I only help those who help themselves."

QUESTIONS.—What happened to the waggon? What is a rut? What did the waggoner do? Who appeared? What did he say? What lesson should we learn from this fable?

Give, spell, and explain other words like the following in sound:—ale, alter, ant, bald, barred, bored, bold, braid, boy, chased, aught, bale, bear, be, beech, beer, beat, bell, berry, bread.

SONNET.—*Wordsworth.*

Composed upon Westminster Bridge, September 3, 1802.

EARTH has not anything to show more fair;
Dull would he be of soul who could pass by
A sight so touching in its majesty:
This city now doth like a garment wear
The beauty of the morning; silent, bare,
Ships, towers, domes, theatres, and temples lie
Open unto the fields, and to the sky;
All bright and glittering in the smokeless air.
Never did sun more beautifully steep
In his first splendour valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at his own sweet will:
Dear God! the very houses seem asleep;
And all that mighty heart is lying still!

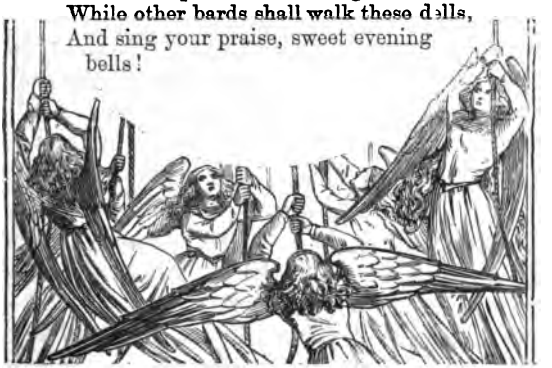
THOSE EVENING BELLS.

Moore.

THOSE evening bells! those evening bells!
How many a tale their music tells
Of youth, and home, and that sweet time
When last I heard their soothing chime!

Those joyous hours are passed away!
And many a heart that then was gay
Within the tomb now darkly dwells,
And hears no more those evening bells!

And so 'twill be when I am gone!
That tuneful peal will still ring on,
While other bards shall walk these dells,
And sing your praise, sweet evening bells!



THE DURATION OF LIFE.—*Grimm.*

du-ra-tion	**ap-point-ed**	**wear-i-some**	**suf-fi-cient**
ap-pear-ance	**re-mem-ber**	**wil-ling-ly**	**dif-fer-ent**
vig-or-ous	**nour-ish-es**	**ri-di-cu-lous**	**sa-tis-fied**

When the world was first created, it was appointed how many years each creature should exist. So the ass came and inquired how long he was to live.

"Thirty years," he was told; and then he was asked, "Is that sufficient?"

"Alas," replied the ass, "that is a long time. Think how many wearisome burdens I shall have to carry from morning till night; how many corn-sacks I shall take to the mill, that others may eat bread, while I receive nothing but blows and kicks, and yet keep always active and obliging. Take away some of my years, I pray."

So the ass was pitied, and a life of only eighteen years appointed to him; whereupon he went gladly away, and the dog then made his appearance, and was asked the same.

"How long do you wish to live?" was inquired of him; "thirty years were too much for the ass, but perhaps you will be satisfied."

"Do you think so?" said the dog. "Remember how much I shall have to run; my feet will not last them out; and then, when I have lost my voice and cannot bark, and my teeth and cannot bite, what will there be for me to do but to crawl and howl from one corner to another?"

So the dog's plea was allowed, and twelve years

appointed for his age, after which he departed and made room for the monkey.

"You will live thirty years willingly, no doubt," was said to the monkey. "You need not work like the ass and the dog, and therefore will always be well off."

"Alas, it should be so," said the monkey; "but really it is very different. I must always be making comical faces for people to laugh at; and all the apples they give me to eat turn out sour ones. How often is sadness hidden by a joke? But thirty years I can never endure." Thereupon ten years were allowed to him.

Last of all, man appeared, healthy and vigorous, and requested a time to be appointed to him.

"You shall live thirty years," was the reply; "is that enough?"

"What a short time!" exclaimed man; "just when I shall have built myself a house, and lighted a fire upon my own hearth, and just when I shall have planted trees to bear me fruit in their season, and I am thinking of enjoying life, I must die! I pray let my life be lengthened!"

"The eighteen years of the ass shall be added."

"That is not enough," said man.

"You shall also have twelve years of the dog's life."

"Still too little," replied man.

"Well, then, you may have the ten years allowed to the monkey; but you must desire no more." Man was then obliged to leave, but he was not satisfied.

Thus man lives seventy years. The first thirty are the years of his manhood, which pass quickly away; he is then healthy and vigorous, works with pleasure, and rejoices in his being. Then follow the eighteen years of the life of the ass, which bring to him one burden after another; he must work for corn which nourishes others, and abuse and blame become the reward of his labours. Next come the twelve years of the dog, during which man has to sit in corners, grumbling because he has no longer any teeth to bite with. And when this time is up, then the ten years of the monkey bring the close of the scene. Then man becomes childish and foolish, and does strange things, which too often make him a jest.

QUESTIONS.—How many years were offered the creatures named? What did the ass say? What did the dog say? What did the monkey say? What did man say? Tell the different parts of man's life, and how each is marked.

Correct the errors in the following:—

Citizen. Oh, misses, my hat and vig's overboard. *Wife.* Dear me! And there's a wale! *Passenger.* A whale! Where? where? I'd give a fi'pund note to see a whale. *Captain.* There aint never no vale, no veres, sir: it's the gen'l'man's mispronuncification, sir; it's his vife's wail vat she vears over her vig, sir, that's all.

Citizen. Villiam, I vants my vig. *Servant.* Vitch vig, sir? *Citizen.* Vy, the vite vig, in the vooden vig box, vitch I vore last Vensday in the westry.

Give other words, spelling and explaining them, like the following in sound:—bite, by, bore, bruise, brute, blue, bough, candid, cannon, coarse, corn.

THE OLD MAN AND HIS SONS.—*Æsop.*

An old man had a number of sons who were often falling out with one another, and nothing their father could do or say seemed to make things better. At last he called them all before him, and showed them a number of rods he had caused to be gathered. Asking one of the lads if he could break one of them, the young man snapped it in two over his knee in a moment. He then got them to tie them all into a firm bundle, and asked the lads if they could break them now; but though each tried his best none of them could break them, or even bend them.

"Now," said the father, "you see what it is to be one, and what it is to be divided. If you live as you do any one can get the advantage of you; but

if you only live in firm and loving friendship, so that you shall be like one, nobody will be able to do you any harm, for each will protect the other.

Use this fable for a dictation lesson.

QUESTIONS.—Were the old man's sons united and loving? What did he get as a lesson for them? What did he do and say first? How did he make the rods so that they could not be broken? What should this teach?

OBJECT LESSON.

TEA.—What is Tea?
The leaf of an evergreen shrub, a Camellia, a native of China and Japan.
How is it prepared for use?
By gathering the leaves and slowly drying them over small furnaces.
What is done next?
While still hot they are heaped on mats, and rolled in the hand to make them curl, as when we see them.
Is this done more than once?
Yes, twice or thrice, till the leaves are dry and firmly rolled together. They are then packed in chests and sent abroad.
How is tea sent to Russia?
It is made into bricks and sent overland on horse or mule-back, in caravans.
When was tea first brought to Europe?
By the Dutch in A.D. 1610. It was introduced into England in A.D. 1666—the year of the Great Fire, and the year after the Great Plague.
What is COFFEE?
The berry of the coffee-tree, a native of Arabia.
Where else does it grow?
In the West Indies, in Persia, the East Indies, and most very warm countries.
Are coffee and tea of any benefit?
Yes. They prevent the waste of the system to some extent, and they are very refreshing.

Give, spell, and explain other words like the following in sound:—choose, clime, cause, cord, serial, creek, cask, crews, clue, dough, days, dear, done, dost, you, faint, fain, furs, Phllip, fowl, four, feet, freeze, flew, fare.

FIDELITY.—*Samuel Butler* (1612—1680).

"True as the dial to the sun
Although it be not shined upon."

SONG.—*R. Herrick* (1591—1674).

GATHER ye rosebuds while ye may,
Old Time is still a flying;
And this same flower that smiles to-day,
To-morrow will be dying.

The glorious Lamp of Heaven, the Sun,
The higher he's a getting
The sooner will his race be run,
And nearer he's to setting.

That age is best which is the first,
When youth and blood are warmer;
But being spent, the worse and worst
Times still succeed the former.

OBJECT LESSON.

GLASS.—Of what is glass made?
Of sand or stone melted with potash.
What is Potash?
It is obtained by passing water through wood ashes, and boiling the water off till the potash alone remains.
How long is it since glass was invented?
We do not know how long it is, but the Egyptians had it in Abraham's day, and could colour it beautifully.
When did England first use glass for windows?
About the year 1180.
When did glass bottles begin to be made in England?
In 1557 they were first made in London.
When were glass mirrors first made in England?
In 1673, at Lambeth.
Of what substance were the mirrors mentioned in the Bible made?
They were made of polished metal.
IRON.—Is Iron of great value to man?
Yes; without it we could not have one of the greatest blessings of civilisation—machinery; and it is of the highest value in ten thousand other applications.
Is it a common metal?
Yes; the commonest of all. There are some mountains all of iron, and it forms part of all earths, many rocks, and even of the structure of plants, animals, and men.
Has it been long known?
Since before history began.
Is it generally found pure?
No; it is commonly found in stone, from which it is obtained by melting it out in furnaces.

ANECDOTE OF SIR WALTER SCOTT'S SCHOOL DAYS.—*Sir Walter Scott.*

de-moc-ra-cy	**fist-i-cuffs**	**con-tem-po-ra-ries**
ar-is-toc-ra-cy	**an-tag-o-nists**	**vic-to-ri-ous**
re-in-force-ment	**aux-il-ia-ries**	**op-po-si-tion**

IT is well known in the South that there is little or no boxing at the Scottish schools. About forty or fifty years ago,* however, a far more dangerous mode of fighting, in parties or factions, was permitted in the streets of Edinburgh, to the great disgrace of the police, and danger of the parties

* About A.D. 1780 or 1790.

concerned. These parties were generally formed from the quarters of the town in which the combatants resided, those of a particular square or district fighting against those of an adjoining one. Hence it happened that the children of the higher classes were often pitted against those of the lower, each taking their side according to the residence of their friends. So far as I recollect, however, it was unmingled either with feelings of democracy or aristocracy, or indeed with malice or ill-will of any kind towards the opposite party. In fact, it was only a rough mode of play. Such contests were, however, maintained with great vigour with stones, and sticks and fisticuffs, when one party dared to charge, and the other stood their ground. Of course, mischief sometimes happened: boys are said to have been killed at these *Bickers*, as they were called, and serious accidents certainly took place, as many contemporaries can bear witness.

The Author's father residing in George Square, in the southern side of Edinburgh, the boys belonging to that family, with others in the square, were arranged into a sort of company, to which a lady of distinction presented a handsome set of colours. Now this company or regiment, as a matter of course, was engaged in weekly warfare with the boys inhabiting the neighbouring suburbs. These last were chiefly of the lower rank, but hardy loons, who threw stones to a hair's-breadth, and were very rugged antagonists at close quarters. The skirmish sometimes lasted for a whole evening, until one party or the other was victorious, when,

if ours were successful, we drove the enemy to their quarters, and were generally chased back by the reinforcement of bigger lads who came to their assistance. If, on the contrary, we were pursued, as was often the case, into the precincts of our square, we were in our turn supported by our elder brothers, domestic servants, and similar auxiliaries.

It followed, from our frequent opposition to each other, that though not knowing the names of our enemies, we were yet well acquainted with their appearance, and had nicknames for the most remarkable of them. One very active and spirited boy might be considered as the principal leader in the cohort of the suburbs. He was, I suppose, thirteen or fourteen years old, finely made, tall blue-eyed, with long fair hair, the very picture of a youthful Goth. This lad was always first in the charge, and last in the retreat—the Achilles, at once, and Ajax, of the Cross-causeway. He was too formidable to us not to have a cognomen, and, like that of a knight of old, it was taken from the most remarkable part of his dress, being a pair of old green livery breeches, which was the principal part of his clothing; for Green-Breeks, as we called him, always entered the battle with bare arms, legs, and feet.

* It fell, that once upon a time, when the combat was at the thickest, this plebeian champion headed a sudden charge, so rapid and furious that all fled before him. He was several paces before his comrades, and had actually laid his hands on the patrician standard, when one of our party, whom

some misjudging friend had intrusted with a hanger, inspired with a zeal for the honour of the corps, struck poor Green-Breeks over the head, with strength sufficient to cut him down. When this was seen, the casualty was so far beyond what had ever taken place before, that both parties fled different ways, leaving poor Green-Breeks with his bright hair plentifully dabbled in blood, to the care of the watchman, who (honest man) took care not to know who had done the mischief. The bloody hanger was flung into one of the Meadow ditches, and solemn secrecy was sworn on all hands; but the remorse and terror of the actor were beyond all bounds, and his apprehensions of the most dreadful character. The wounded hero was for a few days in the Infirmary, the case being only a trifling one. But though inquiry was strongly pressed on him, no argument could make him indicate the person from whom he had received the wound, though he must have been perfectly well known to him. When he recovered, and was dismissed, the author and his brothers opened a communication with him, through the medium of a popular gingerbread baker, of whom both parties were customers, in order to tender a subsidy in name of smart-money. The sum would excite ridicule were I to name it; but sure I am, that the pockets of the noted Green-Breeks never held as much money of his own. He declined the remittance, saying that he would not sell his blood; but at the same time reprobated the idea of being an informer, which he said was *clam, i.e.* base or mean. With much urgency he accepted

a pound of snuff for the use of some old woman—aunt, grandmother, or the like—with whom he lived. We did not become friends, for the *bickers* were more agreeable to both parties than any more pacific amusement; but we conducted them ever after under mutual assurances of the highest consideration for each other.

Perhaps the youthful generosity of the lad will not seem so great in the eyes of others, as to those whom it was the means of screening from severe rebuke and punishment. But it seemed, to those concerned, to argue a nobleness of sentiment far beyond the pitch of most minds; and however obscurely the lad, who showed such a frame of noble spirit, may have lived or died, I cannot help being of opinion, that if fortune had placed him in circumstances calling for gallantry or generosity, the man would have fulfilled the promises of the boy. Long afterwards, when the story was told to my father, he censured us severely for not telling the truth at the time, that he might have attempted to be of use to the young man in entering on life. But our alarms for the consequences of the drawn sword, and the wound inflicted with such a weapon, were far too predominant at the time for such a pitch of generosity.

Besides the strong impression made by the incident at the time, the whole accompaniments of the story are matters to me of solemn and sad recollection. Of all the little band who were concerned in those juvenile sports or brawls, I can scarce recollect a single survivor. Some left the ranks of mimic

war, to die in the active service of their country. Many sought distant lands, to return no more. Others, dispersed in different paths of life, "my dim eyes now seek for in vain." Of five brothers, all healthy and promising, in a degree far beyond one whose infancy was visited by personal infirmity, and whose health after this period seemed long very precarious, I am, nevertheless, the only survivor. The best loved, and the best deserving to be loved, who had destined this incident to be the foundation of literary composition, died "before his day," in a distant and foreign land, and trifles assume an importance not their own, when connected with those who have been loved and lost.

QUESTIONS.—By whom was this story written? Who was he? Where did he live? How did the boys treat the boys of the neighbourhood? Why was it the boy mentioned got his name? What happened to him? Would he tell who did it? Would he take money for his blood? What did he take and for whom? What do you think of him for acting in such a manly way?

Give, spell, and explain words like the following in sound, but of different meaning:—Gilt, grease, great, grown, hole, heart, hail, hue, hair, hall, heal, here, him, eye, in, jam, lain, leek, led, made, male.

A GOOD NAME.—*Shakspere.*

GOOD name, in man or woman, dear my lord,
Is the immediate jewel of their souls.
Who steals my purse, steals trash; 'tis something, nothing;
'Twas mine, 'tis his, and has been slave to thousands.
But he that filches from me my good name
Robs me of that which not enriches him,
And makes me poor indeed.

SONG OF THE NORTH.

Croz-ier	**Er-e-bus**	**Es-qui-maux**
Fitz-James	**glit-ter-ing**	**Christ-mas**

"AWAY, away!" cried the stout Sir John,
"While the blossoms are on the trees;
For the summer is short, and the time speeds on
As we sail for the Northern Seas.
Ho! gallant Crozier, and brave Fitz-James!
We will startle the world, I trow,
When we find a way through the Northern Seas
That never was found till now!
A stout good ship is the *Erebus*,
As ever unfurled a sail,
And the *Terror* will match with as brave a one
As ever outrode a gale."

So they bid farewell to their pleasant homes,
To the hills and valleys green,
With three hearty cheers for their native isle,
And three for the English Queen.

They sped them away beyond cape and bay,
Where the day and night are one,—
Where the hissing light in the heavens grew bright,
And flamed like a midnight sun.
There was nought below save the fields of snow,
That stretched to the icy pole;
And the Esquimaux in his strange canoe,
Was the only living soul.

Along the coast, like a giant host,
The glittering icebergs frowned,
Or they met on the main, like a battle plain,
And crashed with a fearful sound!
The seal and the bear, with a curious stare,
Looked down from the frozen heights;
And the stars in the skies, with great wild eyes,
Peered out from the Northern Lights.
The gallant Crozier, and the brave Fitz-James,
And even the stout Sir John,
Felt a doubt like a chill through their warm hearts thrill,
As they urged the good ships on.

They sped them away, beyond cape and bay,
Where even the tear-drops freeze;
But no way was found, by strait or sound,
To sail through the Northern Seas:
They sped them away, beyond cape and bay,
And they sought, but they sought in vain!
For no way was found through the ice around
To return to their homes again.
But the wild waves rose, and the waters froze,
Till they closed like a prison-wall;
And the icebergs stood, in the silent flood,
Like jailers grim and tall!
O God! O God!—it was hard to die
In that prison-house of ice!
For what was fame, or a mighty name,
When life was the fearful price?

The gallant Crozier and the brave Fitz-James,
And even the stout Sir John,
Had a secret dread, and their hopes all fled,
As the weeks and months passed on.

Then the Ice King came, with his eyes of flame,
And looked on the fated crew;
His chilling breath was as cold as death,
And it pierced their warm hearts through!
A heavy sleep that was dark and deep,
Came over their weary eyes;
And they dreamed strange dreams of the hills and streams,
And the blue of their native skies.
The Christmas chimes, of the good old times
Were heard in each dying ear,
And the darling feet, and the voices sweet
Of their wives and children dear!
But it faded away—away—away!
Like a sound on a distant shore;
And deeper and deeper came the sleep,
Till they slept to wake no more!

Oh, the sailor's wife and the sailor's child—
They weep, and watch, and pray;
And the Lady Jane, she will hope in vain,
As the long years pass away!
The gallant Crozier and the brave Fitz-James,
And the good Sir John have found
An open way to a quiet bay,
And a port where all are bound!
Let the waters roar on the ice-bound shore,
That circles the frozen pole;
There is no sleep, and no grave so deep,
That can hold the human soul.

Sir John Franklin, with Captains Crozier and Fitz-James, in H. M. ships *Erebus* and *Terror*, carrying in all one hundred and thirty-eight persons, sailed on his third Arctic expedition of discovery and survey on the 24th day of May, 1845, from the Thames. Dispatches were received from him up to July 12th, 1845, but from that time the ships vanished into the mysterious solitudes of the icy north. Twenty-one expeditions were subsequently sent out for their rescue or to discover their fate, and at last, in May, 1859, a tin case containing a paper was found, dated April 25th, 1848, and signed by Captain Fitz-James, saying that Franklin had died on the 11th June, 1847, and that the ships had been abandoned on the 22nd of April, 1848. Skeletons and relics of the

crews were also found, and the death of all from cold and hunger was finally brought to light. Lady Franklin is still alive—October, 1873.

QUESTIONS.—Who are named in this poem? Give the names of the ships. When did they sail, and from what place? What did they see in the far north? Name the people there. How many expeditions were sent out to rescue them? What were found in 1859? How long is it since they sailed? Did any come back? What killed them? What does "the day and night being one" mean? What is meant by the "hissing light"?

A LESSON.—*Norman Macleod.*

fa-keer	**mas-sa-cre**	**dif-fi-cul-ty**
nour-ish-ment	**pro-tec-tion**	**o-ver-whelmed**
gra-ti-tude	**rec-om-pense**	**Eu-ro-pe-an**

A Fakeer.

I LATELY heard a story about a poor fakeer, which I will tell you. A fakeer is a Hindoo devotee, who, covered with dust and ashes, visits the villages and cities of India, and is looked upon by the natives as a holy man. At the time of the mutiny, the fakeer found a European baby, which had been hid by its nurse during the

A Fakeer.

massacre; its parents having been able to escape. The poor man, with great difficulty and suffering, carried off the child, and took it with him in his wanderings. Being looked upon as a holy man, he was the better able to get protection and nourishment for his charge. He at last discovered the parents, and presented to them their lost child whom they had given up as dead. Overwhelmed with joy and gratitude, they asked the fakeer what they could do for him, at the same time offering him a large reward. "Nothing will I receive from your hands," he replied; "but if you think me worthy of any recompense, this I ask you for my sake to do: dig a well for the thirsty traveller, and call it by my name!"

QUESTIONS.—What is a fakeer? What was his religion? What was he? What did he find? Did he take care of it? What reward alone would he accept? What lessons does this story teach?

Give, spell, and explain words like the following in sound but different in meaning:—main, maze, mantle, meed, mall, mown, mote, metal, mean, meet, might, muse, no, nose, nay, not, oh! ore, plum, pair, pain, place.

A GOOD DEED.

How far that little candle throws his beams!
So shines a good deed in a naughty world.

Shakspere.

WE MUST BE FREE OR DIE.

WE must be free or die, who speak the tongue
That Shakspere spake; the faith and morals hold
Which Milton held.

Wordsworth.

LESSONS ON SPECIFIC SUBJECTS.

ANIMAL PHYSIOLOGY.

1. "THE BUILD OF THE HUMAN BODY."

1. The human body consists of three principal parts—the head, the trunk, and the limbs. The front of the head is the face, and the round cavity in it is the skull, or vessel for the brain. The trunk is divided into the chest, or *thorax;* and the belly, or abdomen. There are two pairs of limbs—the upper, *arms;* the lower, *legs.* The legs and arms, again, have various parts which correspond in a general way. We have the *thigh* and the *upper arm;* the *leg* and the *forearm;* the *ankle* and the *wrists;* and the *fingers* and the *toes,* which are, as it were, the counterparts of each other.

2. The body is made up of a wonderful structure of flesh, blood, fat, &c., known by various names in the different organs they form; and all this soft matter is supported by a bony framework, which is called the skeleton.

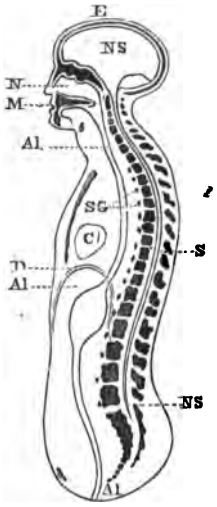
3. If the body of a man were opened exactly down the centre, it would be found to divide into two halves corresponding to one another. First, in the head, is a great hollow case for holding the brain. The skull is a strong arch, consisting of a great many bones, united to each other by tooth-like edges, which fit exactly into each other, or overlap each other, so as to make the protection to the brain complete and strong. In early manhood the skull has twenty-two separate bones, but in childhood the number is much greater, and in old age much smaller.

4. The brain is a mass of soft, grey, pulpy substance, and is common to man and all the "vertebrate" animals, but is most perfectly developed in man. The brain in a man, when it is its full size, weighs about forty-nine or fifty ounces; in woman it weighs about forty-four; but it varies in different persons. The largest male brain weighs about sixty-five ounces; the smallest, about thirty-four. The largest female brain weighs about fifty-six, and the smallest about thirty-one ounces. The weight of the brain increases till about the age of forty, after which it slowly diminishes in weight, at the rate of about an ounce each ten years.

5. The skull, or brain case, is connected with the uppermost of thirty-three bones, resting one on the other in a long, flexible column, forming the backbone. The separate bones are called *vertebræ,* and the whole are called the *vertebral column.* Through the whole of these runs a continuous canal or tube, which opens into the skull, and is filled with what is called the *spinal cord,* its own name

being the *spinal canal.* This long white cord—the *spinal cord*—runs up to the brain and joins itself to it, becoming one with it. The vertebral column runs down the whole length of the body near the back.

6. In front of the brain case, or skull, lies what is called the cavity of the face—that is, the space between the face and the bony wall which contains the brain. This cavity is filled in great part by the mouth and throat, into which the upper end of the gullet opens—that is, of the pipe which conveys food to the stomach. This pipe is known as the "alimentary canal"—and is the channel by which our food or aliment is conveyed into the body. It runs down through the whole trunk, stretching out into the stomach, about the middle of the body, and then becoming the bowels. It is by this that all food is taken into the system, and that whatever is not used for nourishment is rejected. In a full-grown man it is nearly forty feet in length, but it is so beautifully packed and secured in the lower and longer part of its course, that we never know anything about it when we are in health.



SIDE VIEW OF THE HUMAN BODY, LAID OPEN TO SHOW THE CHIEF ORGANS.

2. "THE BUILD OF THE HUMAN BODY."

E. The cavity of the skull containing the brain.

N S., N S. The nervous system of the brain and spine, known as the cerebro-spinal nervous system.

N. The cavity of the nose.

M. The cavity of the mouth

Al., Al., Al. The alimentary canal drawn without the bendings and convolutions in nature; the central enlargement is the stomach.

S G. The sympathetic ganglia.

C. The heart.

D. The diaphragm.

S. The spinal column.

1. The whole front parts of the body from the backbone, or *vertebral column*, is called the *ventral* chamber. It is divided into

two parts—the *thorax* and the *abdomen*, or belly, by a curious structure, in part flesh and in part membrane, known as the *diaphragm*. This is an arched shield over the stomach, springing from the backbone just behind that organ, and bending down to the front of the abdomen, to which it is joined, just at the bottom of the stomach, a hole in it allowing the alimentary canal, of which the stomach is an enlargement, to pass through.

2. The upper half of the ventral cavity, thus divided, is known as the thorax,* or chest. In the thorax are the *heart* and the *two lungs*, which lie, one on each side of the heart. The heart itself is nearly in the middle of the chest.

3. In the abdomen, besides the stomach and the bowels, are *two kidneys*, one against each side of the vertebral column or backbone; the *liver*, the *pancreas*† or "sweetbread" and the *spleen*.

4. From the spinal cord, as connected with the brain, proceed, at some height above the heart, masses of nervous substance, called *ganglia*,‡ which pass through the diaphragm, and are one of the chief seats of nervous power.

5. There are more than two hundred separate bones in the human body, but the number varies at different ages, many which are distinct in early life becoming united in old age.

6. To protect the vital organs, which lie in the upper part of the body, or thorax, twenty-four ribs, spring, twelve on each side, from the vertebral column, or backbone, and unite themselves, mostly by cartilages, with a broad bony plate in front of the chest, called the breast-bone. They are like so many strong hoops, to protect the heart and lungs within.

7. There are two bones at the shoulder—the *scapula*, or shoulder-blade; and the *clavicle*, or collar-bone. The thigh bones are connected with those of the body by a broad bony structure called the pelvis, which consists of several bones, and forms a cup on which the body rests. The upper extremities of the thigh bones, beautifully rounded, move in finely-turned sockets in this framework. In each of the legs there are thirty bones, counting the knee-pan, and the same number in each of the arms.

* Thorax comes from the Greek verb "to leap," because the heart leaps in the chest or breast.

† *Pancreas* means "*all flesh*." It is made up of two Greek words.

‡ *Ganglion* means a knot—*ganglia* is the plural.

FRONT VIEW OF THE HUMAN BODY LAID OPEN TO SHOW THE CHIEF ORGANS.

A. and B. The right and left lungs.

P. The pericardium,* the bag of the heart, laid open to show that organ, C.

Passing upwards from the heart to the neck are the great bloodvessels—a, the aorta, or great artery, which rises up from the left ventricle, or cavity, of the heart—and, above it, branching off to the two sides of the neck, the great veins.

Between these veins are, at the top, the Pharynx,† or throat, so called because the throat conveys food to the stomach: next, the Larynx,‡ or organ of voice, and then, the windpipe.

These are the contents of the thorax, or breast.

D D are parts of the cartilages of the ribs, and the point in the centre is the tip of the breast bone, or sternum.§ They are drawn here because the diaphragm is fixed to them.

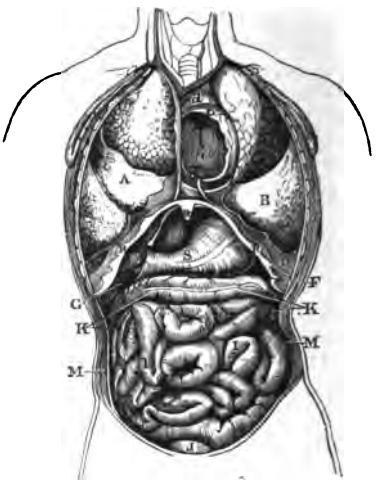


Fig. 3.

R R. The diaphragm.‖ The arched muscular membrane which supports the contents of the chest, and divides the chest from the belly.

E. The liver. G. The gall bladder.

S. The stomach. Part of the spleen is shown on its left side.

K K. The great bowel, or colon.

M M. I I. The smaller bowels. J. Part of the bladder.

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* Greek, *peri*, around, and *kardia*, the heart.
† From *phero*, to convey (Greek).
‡ Larynx is the Greek word for throat.
§ From *sternon*, the breast (Greek).
‖ *Dia*, across, and *phrasso*, to fence (Greek).

FROM ADDISON.—1672—1719.

'Tis not in mortals to command success,
But we'll do more, Sempronius: we'll deserve it.

FROM YOUNG.—1681—1765.

Pigmies are pigmies still, though perched on Alps,
And pyramids are pyramids in vales.

THE ICE-PLOUGH.—*Charles Kingsley.*

Swit-zer-land	**gla-cier**	**Snow-don**
High-lands	**dif-fi-cult**	**un-der-stand**
Finch-hamp-stead	**veg-e-ta-bles**	**Arc-tic**
Spitz-berg-en	**con-tin-u-al-ly**	**mo-raines**

You want to know why I am so fond of that little bit of limestone, no bigger than my hand, which lies upon the shelf; why I ponder over it so often, and show it to all sensible people who come to see me?

You see there is a smooth scraped part on one edge, that seems to have been rubbed against a stone. That piece of stone came from the side of a

glacier in Switzerland, and it was polished by the glacier ice. The glacier melted and shrank, this last hot summer, farther back than it had done for many years, and left bare sheets of rock, which it had been scraping at for ages, with all the marks fresh upon them. And that bit was broken off and brought to me, who never saw a glacier myself, to show me how the marks which the ice makes in Switzerland are exactly the same as those which the ice has made in Snowdon and in the Highlands, and many another place where I have traced them.

It is very difficult, I know, for a little boy like you to understand how ice, and much more how soft snow, should have such strength that it can grind this little stone, much more such strength as to grind whole mountains into plains. You have never seen ice and snow do harm. Ice and snow are to you mere playthings; and you long for winter, that you may make snowballs, and play hockey, and skate upon the ponds, and eat ice, like a foolish boy, till you make your stomach ache. And I dare say you have said, like many another boy, on a bright cheery ringing frosty day, "Oh that it would be always winter!" You little knew for what you asked. You little thought what the earth would soon be like, if it were always winter,—if one sheet of ice on the pond glued itself on to the bottom of the last sheet, till the whole pond was a solid mass,—if one snow-fall lay upon the top of another snow-fall till the moor was covered many feet deep, and the snow began sliding slowly down the glen from Coombes's, burying the green fields, tearing the trees up by

their roots, burying gradually house, church, and village, and making this place for a few thousand years what it was many thousand years ago. Good-bye then, after a very few winters, to bees, and butterflies, and singing birds, and flowers; and good-bye to all vegetables and fruit and bread; good-bye to cotton and woollen clothes. You would have, if you were left alive, to dress in skins, and to eat fish and seals, if any came near enough to be caught. You would have to live, in a word, if you could live at all, as Esquimaux live now in Arctic regions, and as people had to live in England ages since, in the times when it was always winter, and icebergs floated between here and Finchampstead.

I said that if the snow piled high enough upon the moor, it would come down the glen in a few years through Coombes's Wood; and I said then you would have a small glacier here—such a glacier (to compare small things with great) as now comes down so many valleys in the Alps, or as come down all the valleys of Greenland and Spitzbergen till they reach the sea, and there end as cliffs of ice, from which great icebergs snap off continually, and fall and float away, wandering southward into the Atlantic for many a hundred miles. You have seen drawings of such glaciers in Captain Cook's Voyages; and you may see photographs of Swiss glaciers in any good London print-shop; and therefore you may judge for yourself how you would like to live where it is always winter.

You must bear in mind what a glacier means—that it is a river of ice, fed by a lake of snow. The lake

from which it springs is the eternal snow-field which stretches for miles and miles along the mountain tops, fed continually by fresh snow-storms falling from the sky. That snow slides off into the valleys hour by hour, and, as it rushes down, is ground, and pounded, and thawed, and frozen again, into a sticky paste of ice, which flows slowly but surely till it reaches the warm valley at the mountain foot, and there melts bit by bit. The long black lines which you see winding along the white and green ice of the glacier are the stones which have fallen from the cliffs above. They will be dropped at the end of the glacier, and mixed with silt and sand and other stones which have come down inside the glacier itself, and piled up in the field in great mounds, which are called moraines, such as you may see and walk on in Scotland many a time, though you might never guess what they are.

QUESTIONS.—What story does the smooth scraped stone tell? Where are great glaciers found now? What is a glacier? When were glaciers once found in Britain? What would happen if we had winter always? How are icebergs formed?

PART II.

re-mem-ber	Ulls-wa-ter	Win-der-mere
Hun-stan-ton	Bourne-mouth	Lab-ra-dor
Al-der-shot	Farn-bo-rough	Wel-ling-ton
sax-i-frag-es	Suth-er-land-shire	Fair-y-land

The river which runs out at the glacier foot is, you must remember, all foul and milky with the finest mud; and that mud is the grinding of the rocks over which the glacier has been crawling down.

and scraping them as it scraped my bit of stone with pebbles and with sand. And this is the great ice-plough that ploughs down old mountains, and spreads the stuff of them about the valleys to make rich straths of fertile soil. Nay, so immensely strong, because immensely heavy, is the share of this great ice-plough, that some will tell you that it has ploughed out all the mountain lakes in Europe and in North America; that such lakes, for instance, as Ullswater or Windermere have been scooped clean out of the solid rock by ice which came down these glaciers in old times.

Do I mean that there were ever glaciers here? No, I do not. There have been glaciers in Scotland in plenty. But I will show you in any gravel-pit, or hollow lane upon the moor, the marks, not of a glacier, which is an ice-river, but of a whole sea of ice.

Let us come up to the pit upon the top of the hill, and look carefully at what we see there. The lower part of the pit, of course, is a solid rock of sand. On the top of that is a cap of gravel, five, six, ten feet thick. Now the sand was laid down there by water at the bottom of an old sea; and therefore the top of it would naturally be flat and smooth, as the sands at Hunstanton or at Bournemouth are; and the gravel, if it was laid down by water, would naturally lie flat on it again: but it does not. See how the top of the sand is dug out into deep waves and pits, filled up with gravel. And see, too, how over some of the gravel you get sand again, and then gravel again, and then sand again, till you

cannot tell where one fairly begins and the other ends. Why, here are little dots of gravel, six or eight feet down, in what looks the solid sand rock, yet the sand must have been opened somehow to put the gravel in. Now, how did ice do this?

A gentleman named Trimmer, who, alas! is now dead, was, I believe, the first to find it out. He knew that along the coast of Labrador, and other cold parts of North America, and on the shores, too, of the great river St. Lawrence, the stranded icebergs, and the ice-foot, as it is called, which is continually forming along the freezing shores, grub and plough, every tide, into the mud and sand, and shove up before them, like a ploughshare, heaps of dirt; and that, too, the ice itself is full of dirt, of sand and stones, which it may have brought from hundreds of miles away; and that, as this ploughshare of dirty ice grubs onward, the nose of the plough is continually being broken off, and left underneath the mud; and that, when summer comes, and the ice melts, the mud falls back into the place where the ice had been, and covers up the gravel which was in the ice. So, what between the grubbing of the ice-plough into the mud, and the dirt which it leaves behind when it melts, the stones, and sand, and mud upon the shore are jumbled up into curious curved and twisted layers, exactly like those which Mr. Trimmer saw in certain gravel-pits. And when I first read about that, I said, "And exactly like what I have been seeing in every gravel-pit round here, and trying to guess how they could have been made by waves or currents of water,

and yet never could make any guess which would do." But after that, it was all explained to me; and I am certain, as certain as I can be of any earthly thing, that the whole of these Windsor Forest Flats were ages ago ploughed and harrowed over again by ice-floes and icebergs, drifting and stranding in a shallow sea.

When they were trenching the new plantation close to Wellington College station, the men turned up out of the ground a great many Sarsden stones; that is, pieces of hard sugary sand, such as Stonehenge is made of. And when I saw these I said, "I suspect these were brought here by icebergs:" but I was not sure, and waited. As the men dug on, they dug up a great many large flints, with bottle-green coats. "Now," I said, "I am sure I know where these flints must have come from." And for reasons which would be too long to tell you here, I said, "Some time or other, icebergs have been floating northward from the Hog's Back over Aldershot and Farnborough, and have been trying to get into the Vale of Thames by the slope at Wellington College station; and they have stranded, and dropped these flints." And I am so sure of that, that if I found myself out wrong after all I should be at my wits' end; for I should know that I was wrong about a hundred things besides.

If I could take you with me up to Scotland,—take you, for instance, along the Tay, up the Pass of Dunkeld, or up Strathmore towards Aberdeen, or up the Dee towards Braemar,—I could show you signs, which cannot be mistaken, of the time when

Scotland was, just like Spitzbergen or like Greenland now, covered in one vast sheet of snow and ice, from year's end to year's end; when, glaciers ploughing out its valleys, icebergs were breaking off the icy cliffs and floating out to sea; when not a bird, perhaps, was to be seen save sea-fowl, not a plant upon the rocks but a few lichens, and Alpine saxifrages, and such like—desolation and cold and death everywhere. The ice-time went on for ages and ages; and yet it did not go on in vain. Through it the ice was ploughing down the mountains of Scotland to make all those rich farms which stretch from the north side of the Frith of Forth into Sutherlandshire. I could show you everywhere the green banks and knolls of earth, which Scotch people call "kames" and "tomans"—perhaps brought down by ancient glaciers, or dropped by ancient icebergs—now so smooth and green through summer and through winter, among the wild heath and the rough peat-moss, that the old Scots fancied, and I dare say Scotch children fancy still, fairies dwelt inside, and that if you laid your ear against the mounds, you might hear the fairy music, sweet and faint, beneath the ground. If you watched the mound at night, you might see the fairies dancing the turf short and smooth, or riding out on fairy horses, with green silk clothes and jingling bells. But if you fell asleep upon the mounds, the fairy queen came out and carried you for seven years into Fairyland, till you awoke again in the same place, to find all changed around you, and yourself grown thin and old.

These are all dreams and fancies—untrue, not because they are too strange and wonderful, but because they are not strange and wonderful enough; for more wonderful surely than any fairy tale it is, that God should make a rich and pleasant land by the brute force of ice.

And were there any men and women in that old age of ice? That is a long story, and a dark too; we will talk of it next time.

QUESTIONS.—What do you see running out at the foot of a glacier? What do you see in a gravel-pit? How was it done? How were the mountain lakes formed? What floated over Aldershot and the country round? How do you know? What countries was Scotland like once? What good did these glaciers do? What does the soil in the valleys that make our rich farms owe to this time of ice, or winter? What is an iceberg? Describe the state of Greenland now? What did the Scotch think about the fairy mounds? What are they?

THE SKYLARK.—*James Hogg* (1772—1835).

wil-der-ness	**blithe-some**	**cum-ber-less**
jour-ney-ing	**gloam-ing**	**hap-pi-ness**

BIRD of the wilderness,
Blithesome and cumberless,
Sweet be thy matin o'er moorland and lea!
Emblem of happiness,
Blest is thy dwelling-place—
Oh! to abide in the desert with thee!
Wild is thy lay and loud,
Far in the downy cloud,
Love gives it energy, love gave it birth.
Where, on thy dewy wing,
Where art thou journeying?
Thy lay is in heaven, thy love is on earth.

O'er fell and fountain sheen,
O'er moor and mountain green,
O'er the red streamer that heralds the day;
Over the cloudlet dim,
Over the rainbow's rim,
Musical cherub, soar, singing away!
Then, when the gloaming comes,
Low in the heather blooms,
Sweet will thy welcome and bed of love be,
Emblem of happiness,
Blest is thy dwelling-place:
Oh! to abide in the desert with thee!

James Hogg was a simple shepherd, in the South of Scotland, but he was none the less a man of genius and a true poet. Try to write the second verse in prose.

DICTATION.—Use the first verse for dictation.

QUESTIONS.—Who was James Hogg? When was he born and when did he die? What does he call the lark? What does he say about it? Of what is it an emblem? What name does he give to the cloud? What heralds the day? What is it? What is the rainbow? Where does heather grow? What is it?

THE ANT AND THE GRASSHOPPER.—*Æsop.*

ad-van-tage **grass-hop-per** **com-fort-able**
star-va-tion **hap-pened** **pro-vid-ing.**

In the winter a nest of ants was busy about the mouth of their dwelling, taking advantage of a few mild days to get some work done that was pressing. They had been busy all summer, and had filled their barns in the ground with rich stores of wheat against the cold months, so that they were plump and hearty, and had no care on their minds about their living. A poor grasshopper, who had lived on after most of his friends were dead, happened to come past just then, and eyed the fat comfortable-looking ants with many wishes that he had only a little of what he knew they had laid up for themselves in the ground. Coming up to them he asked them very humbly, for some food, to save him from starvation. "What were you doing in the summer?" asked the ants.

"I am sorry to tell you," he replied, "that I spent all the summer singing and dancing, and never thought about providing for winter." "Well," said the ants, "we can't keep you—there, take that one meal, we can give you no more. Those who are idle in summer, must starve in the winter."

QUESTIONS.—What had the ants been doing in summer? What had the grasshopper been doing? What did the ants look like? Was the other plump and happy? What answer did it get? What does this teach you?

THE PICKET ON THE POTOMAC.

Con-fed-e-rate vol-un-teer Po-to-mac ri-fle-man
trem-u-lous trun-dle-bed un-spo-ken sud-den-ly

The original of the following verses was found in the pocket of a Confederate Volunteer who died in the camp on the Potomac.

"ALL quiet along the Potomac," they say,
"Except now and then a stray picket
Is shot as he walks on his beat to and fro,
By a rifleman hid in the thicket."
'Tis nothing—a private or two now and then
Will not count in the tale of the battle;
Not an officer lost—only one of the men
Breathing out all alone the death-rattle.

All quiet along the Potomac to-night,
Where the soldiers lie peacefully dreaming,
Their tents in the ray of the clear autumn moon,
And the light of the watchfires gleaming.
A tremulous sigh from the gentle night wind
Through the forest leaves slowly is creeping,
While the stars up above, with their glittering eyes,
Keep watch while the army is sleeping.

There's only the sound of the lone sentry's tread,
As he tramps from the rock to the fountain,
And thinks of the two in the low trundle-bed
Far away in the hut on the mountain.
His musket falls slack; his face, dark and grim,
Grows gentle with memories tender,
As he mutters a prayer for the children asleep,
For their mother,—may heaven defend her!

The moon seems to shine as serenely as then,
That night when the love yet unspoken,
Lingered long on his lips, and when low-murmured vows
Were pledged never more to be broken.
Then, drawing his sleeve roughly over his eyes,
He dashes the tears that are welling,

And gathers his gun closer up to its place,
As if to keep down the heart-swelling.

He passes the fountain, the blasted pine-tree,
The footstep is lagging and weary;
Yet onward he glides through the broad belt of light,
Towards the shade of a forest so dreary.
Hark! Was it the night wind that rustled the leaves?
Is it moonlight so suddenly flashing?
It looked like a rifle—"Ha! Mary, good night!"
His life-blood is ebbing and dashing.

All quiet along the Potomac to-night,
No sound save the rush of the river;
But the dew falls unseen on the face of the dead—
The picket's off duty for ever.

QUESTIONS.—Where is the Potomac? What is a picket? What time of the year did this story happen? Can you put the description in the second verse in words of your own? Can you do the same with the third verse? Did the sentry get back to his wife and children?

LINES FROM THOMAS MOORE.

(1780—1852).

LIKE the stained web that whitens in the sun,
Grow pure by being purely shone upon.

Sunshine, broken in the rill,
Though turned aside, is sunshine still.

Earth has no sorrow that Heaven cannot heal.

Some flow'rets of Eden we still inherit,
But the trail of the serpent is over them all.

THE POND IN THE WOOD.—*A Philosopher.*

va-ri-e-gat-ed **night-shade** **com-mand-ments**
gen-e-ral-ly **mel-an-chol-y** **watch-ful-ness**

As soon as you get inside the belt of wood, and begin to go down to the pond, the damp, and the dusk, and the scent of the dead leaves and the ramps make you feel as if you were in a very old, old church. Plenty of wake-robin also grows in the wood, with its leaves like spotted spear-heads, and its stumpy red and purple pencils wrapped up in faded green satin ("lords and ladies," I think, we used to call them when I was a youngster). The sweet flag grows all about the pond, and in it, too; and the corn-flag brightens up its banks with great yellow flowers; and the stinking-iris nods its purple

blossoms on them—looking a great deal nicer than it smells; and big tangled sheaves of bright-green forget-me-not, dotted with tiny stars of blue and gold, bulge over, and into, and straggle along, the water. A great part of the pond is choked and carpeted with crow-silk, and water-flannel, and moor-ball, spangled with glassy air-bubbles and bright-backed little beetles; and white water-lilies and yellow water-lilies spread a splendid service of china and gold on glossy-green table-cloths, for the water-fairies to take supper off by moonlight; and yet, for all that, the great pond is a melancholy place. Big fish mope motionless in its corners, as if they had something on their minds; and little fish leap through its duck-weed, almost covered with the green scum, not as if they did it for the fun of the jump and the splash, but to keep for a moment out of the jaws of the shark-like pike that is waiting for them. The pond's great pike—it has only one, according to village report—is said to have dragged into its waters a dog that came to lap them. No one ever bathes in the pond. Steely-blue dragon-flies zigzag over the water on their gauzy wings, and two or three kingfishers flash backwards and forwards across it like streaks of variegated lightning.

There is plenty of bright colour in and about the pond, and yet it still looks sad. In very hard weather, wild ducks flock to the pond, and sometimes wild geese also; but generally you can only see a shy teal or shoveller floating on it a long way off, with perhaps a brood of funny, fluffy little ones

splashing about, or kicking up their heels as if they had a skewer run through their bodies to swing over on. At almost all seasons of the year, however, if you are anywhere near the pond after sundown, you can hear the bittern booming as if it wondered how the sun could ever rise again on a world so full of wickedness and woe. I ought to have said before, too, that the deadly nightshade grows in great bushes round the pond. Belladonna —"beautiful lady"—is the learned name for nightshade: and very pretty its berries look as they ripen from scarlet into purple "Polsted cherries;" but, if you are ever tempted to pluck and eat them, remember that Death is rolled up small in those pretty pills.

* "But if the pond is such a melancholy place, why does Sir Henry like to go to it, when he is such a melancholy old gentleman?"

That is the very reason why he likes to go, and why Simpson does not want him to go. The pond, I fancy, makes him seem to come close again to the three people in the world he loved the most, and so he likes to go there. He says that he can't *see* them anywhere else, and seems to forget that it was at the pond he lost them. He cries sometimes when Simpson makes him go another way.

The old village people are quite right in saying that poor old broken-down Sir Henry was a fine, dashing young fellow once. He married a good, beautiful lady, and all the tenants were nearly as fond and as proud of their kind handsome landlord, and his kind beautiful wife, as *they* were of each

other. When a son and heir was born, his father and mother doted on him, and the farmers and the village people talked as if such a baby had never cut its teeth before. He grew up to be as handsome as his father, and at first it seemed as if he would be as good; but he turned wild when he went away from home, and Sir Henry had to pay ever so much money for him, and people began to notice how suddenly old Sir Henry and Lady Mary looked. But still they could not help loving their naughty son, and, though he was far away from Ackhurst on his twenty-first birthday, they had an ox roasted whole and got up all kinds of fun for the farmers and the village people. He never came back to Ackhurst until he was past thirty, and all that time his father was paying away ever so much more money for him, and both father and mother looked older and older every day. When their son came back, he was so very ill that he could hardly make them understand that the little girl he brought with him was his only child. Maud was a sweet sunny little girl, but there was not time to take much notice of her then —her father was so very, very ill. Lady Mary would not let any one nurse him but herself, and one night she was so tired that she fell asleep for a minute. When she woke she saw that the bed was empty, and that the window was open. The sick man had jumped out of it in his fever, and his mother could see him running fast over the moonlit park, towards the woody hollow. Lady Mary called Sir Henry, and then ran out of the house herself, but, when her husband got to the pond, she was in

the water as well as her son, and when they were taken out they were both dead. The mother's arms were clasped tight round her son, but she had not been able to save him.

*You can think of Ackhurst Pond when you hear "Lord have mercy on us, and incline our hearts to keep this law," chanted after the Commandments. If Sir Henry's son had honoured his father and mother, his mother's days as well as his own would have been longer in the land, and his father, perhaps, would not have to ride about, looking so lonely, under Simpson's care.

At first Sir Henry seemed as if he was stunned by the death of his wife and son; but, after a time, he took to little Maud as if he would love her enough for both of them as well as himself, and she was as fond of him. She was too young—poor little soul—to miss her grandmamma much, or to understand that she was an orphan; but she quite understood how nice it was to have a kind grandpapa always ready to do something to please her. She toddled about the house, holding his finger in her fat little hand; he gave her rides on his foot, and on his shoulder, and in the pony-chaise, and before him on his horse; he bought her more toys than even her busy little fingers could break; she slept in a little cot beside his bed; and she sat on a high chair at his right hand at dinner. He could not bear to have his little pet out of his sight. But, though he did pet her, she was not spoilt. Every one called her a little darling, and said that it was most fortunate that Sir Henry had such a sweet

little charge as Miss Maud to make him take an interest in life.

But one day, when she and her grandpapa were walking in the park, she saw the woody hollow, and asked him to take her down into it. He had never been near the pond since that dreadful night, but he could not refuse her anything. So they went out of the sunshine into the damp shade, and through it down to the side of the sad pond. Little Maud, however, thought it the prettiest place she had ever seen in her life. She was so unwilling to come away that her grandpapa sat down in the driest spot that he could find, to watch her whilst she flitted about, as bright as a butterfly and as blithe as a bird.

She stayed so long that, in spite of his watchfulness, her grandpapa fell asleep.

He woke with a start, and anxiously shouted "Maud!" But Maud could not hear him, for she was lying dead under one of the nightshade bushes, with her pale, drawn little face and flabby little fingers stained with the deadly juice.

After that Sir Henry never held up his head again. It sank lower and lower, until it came to hang as it does now. But when he is by the pond, the poor old man talks to his wife and son (if Simpson will let him), and looks about half-pleased, half-puzzled, as if he was *nearly* sure that he could see poor little Maud dancing in and out among the bushes. He forgets then that she and her grandmother and her father have been sleeping in Ackhurst Chancel this many a year.

QUESTIONS.—Can you name some of the plants that grew round the pond? What plants grew in the water? What was the name of the great fish in it? What flies zigzagged over it? What birds flashed across it? What water birds lived on it or round it? What happened there? Tell the story of the death of the son and wife. How did little Maud die?

THE SPLENDOUR FALLS ON CASTLE WALLS.—*Tennyson.*

THE splendour falls on castle walls
And snowy summits old in story:
The long light shakes across the lakes,
And the wild cataract leaps in glory.
Blow, bugle, blow, set the wild echoes flying,
Blow, bugle; answer, echoes, dying, dying, dying.

O hark, O hear! how thin and clear,
And thinner, clearer, farther going!
O sweet and far from cliff and scar
The horns of Elfland faintly blowing!
Blow, let us hear the purple glens replying:
Blow, bugle; answer, echoes, dying, dying, dying.

O love, they die in yon rich sky,
They faint on hill or field or river:
Our echoes roll from soul to soul,
And grow for ever and for ever.
Blow, bugle, blow, set the wild echoes flying,
And answer, echoes, answer, dying, dying, dying.

EPITAPH.—*Ben Jonson*, 1574—1637.

UNDERNEATH this sable hearse
Lies the *subject* of all verse,
Sidney's sister, Pembroke's mother.
Death! ere thou hast slain another,
Learn'd and fair and good as she,
Time shall throw a dart at thee.

VOLCANOES.—*Charles Kingsley.*

com-fort-a-ble	Pa-ra-dise	Phle-græ-an
Je-ru-sa-lem	o-ver-pow-ered	Pom-pe-ii
Ve-su-vi-us	o-ver-grown	poi-son-ous
gen-tle-man	Her-cu-la-ne-um	Sta-bi-æ

Nearly 1800 years ago, in the old Roman times, for ages and ages, Mount Vesuvius had been lying quiet, like any other hill. Beautiful cities were built at its foot, filled with people who were as handsome, and as comfortable, and (I am afraid) as wicked, as people ever were on earth. Fair gardens, vineyards, oliveyards, covered the mountain slopes. It was held to be one of the Paradises of the world. As for the mountain's being a burning mountain, who ever thought of that? To be sure, on the top of it was a great round crater, or cup, a mile or more across, and a few hundred yards deep. But that was all overgrown with

bushes and wild vines, full of boars and deer. What sign of fire was there in that? To be sure, also, there was an ugly place below by the seashore, called the Phlegræan field, where smoke and brimstone came out of the ground, and a lake called Avernus, over which poisonous gases hung, and which (old stories told) was one of the mouths of the Nether Pit. But what of that? It had never harmed any one, and how could it harm them?

So they all lived on, merrily and happily enough, till, in the year A.D. 79 (that was nine years, you know, after the Emperor Titus destroyed Jerusalem), there was stationed in the Bay of Naples a Roman admiral, called Pliny, who was also a very studious and learned man, and author of a famous old book on natural history. He was staying on shore with his sister; and as he sat in his study she called him out to see a strange cloud which had been hanging for some time over the top of Mount Vesuvius. It was in shape just like a pine-tree; not, of course, like one of our branching Scotch firs here, but like an Italian stone-pine, with a long straight stem, and a flat parasol-shaped top. Sometimes it was blackish, sometimes spotted; and the good Admiral Pliny, who was always curious about natural science, ordered his cutter and went away across the bay to see what it could be. Earthquake shocks had been very common for the last few days: but I do not suppose that Pliny had any notion that the earthquakes and the cloud had aught to do with each other. However, he soon found out that they

had, and to his cost. When he got near the opposite shore some of the sailors met him and entreated him to turn back. Cinders and pumice-stones were falling down from the sky, and flames breaking out of the mountain above. But Pliny would go on; he said that if people were in danger it was his duty to help them; and that he must see this strange cloud, and note down the different shapes into which it changed. But the hot ashes fell faster and faster; the sea ebbed out suddenly, and left them nearly dry, and Pliny turned away to a place called Stabiæ, to the house of a friend, who was just going to escape in a boat. Pliny told him not to be afraid; ordered his bath like a true Roman gentleman; and then went into dinner with a cheerful face. Flames came down from the mountain, nearer and nearer as the night drew on: but Pliny persuaded his friend that they were only fires in some villages from which the peasants had fled; and then went to bed and slept soundly. However, in the middle of the night they found the courtyard being fast filled with cinders, and, if they had not woke up the Admiral in time, he would never have been able to get out of the house. The earthquake shocks grew stronger and fiercer, till the house was ready to fall; and Pliny and his friend, and the sailors and the slaves all fled into the open fields, amid a shower of stones and cinders, tying pillows over their heads to prevent their being beaten down. The day had come by this time: but not the dawn; for it was still pitch dark as night. They went down to their boats upon

the shore: but the sea raged so horribly, that there was no getting on board of them. Then Pliny grew tired, and made his men spread a sail for him, and lay down on it. But there came down upon them a rush of flames, and a horrible smell of sulphur, and all ran for their lives. Some of the slaves tried to help the Admiral upon his legs: but he sank down again overpowered with the brimstone fumes, and so was left behind. When they came back again, there he lay dead: but with his clothes in order, and his face as quiet as if he had been only sleeping. And that was the end of a brave and learned man; a martyr to duty and to the love of science.

*But what was going on in the meantime? Under clouds of ashes, cinders, mud, lava, three of those happy cities were buried at once—Herculaneum, Pompeii, Stabiæ. They were buried just as the people had fled from them, leaving the furniture and the earthenware, even often jewels and gold, behind, and here and there among them a human being who had not had time to escape from the dreadful deluge of dust. The ruins of Herculaneum and Pompeii have been dug into since; and the paintings, especially in Pompeii, are found upon the walls still fresh, preserved from the air by the ashes which have covered them in.

And what had become of Vesuvius, the treacherous mountain? Half or more than half of the side of the old crater had been blown away; and what was left, which is now called the Monte Somma, stands in a half circle round the new cone

and new crater which is burning at this very day. True, after that eruption which killed Pliny, Vesuvius fell asleep again, and did not wake for 134 years, and then again for 269 years; but it has been growing more and more restless as the ages have passed on, and now hardly a year passes without its sending out smoke and stones from its crater, and streams of lava from its sides.

And now, I suppose, you will want to know what a volcano is like, and what a cone, and a crater, and lava are?

What a volcano is like it is easy enough to show you; for they are the most simply and beautifully shaped of all mountains, and they are alike all over the world, whether they be large or small. Almost every volcano in the world, I believe, is, or has been once, of the shape which you see in this drawing; even those volcanoes in the Sandwich Islands, of which you have often heard, which are now great lakes of boiling fire upon flat downs, without any cone to them at all. They, I believe, are volcanoes which have fallen in ages ago: just as in Java a whole burning mountain fell in in the night of the 11th of August, in the year 1772. Then, after a short and terrible earthquake, a bright cloud suddenly covered the whole mountain. The people who dwelt around it tried to escape: but before the poor souls could get away the earth sank beneath their feet, and the whole mountain fell in, and was swallowed up, with a noise as if great cannon were being fired. Forty villages and nearly 3,000 people were destroyed,

and where the mountain had been was only a plain of red-hot stones. In the same way in the year 1698, the top of a mountain in Quito fell in in a single night, leaving only two immense peaks of rock behind, and pouring out great floods of mud mixed with dead fish; for there are underground lakes among those volcanoes, which swarm with little fish which never see the light.

But most volcanoes, as I say, are, or have been, the shape of the one which you see here. This is Cotopaxi, in Quito; more than 19,000 feet in height. All those sloping sides are made of cinders and ashes, braced together, I suppose, by bars of solid lava-stone inside, which prevent the whole from crumbling down. The upper part, you see, is white with snow, as far down as a line which is 15,000 feet above the sea. For the mountain is in the tropics, close to the

equator, and the snow will not lie in that hot climate any lower down. But now and then the snow melts off, and rushes down the mountain side in floods of water and of mud, and the cindery cone of Cotopaxi stands out black and dreadful against the clear blue sky, and then the people of that country know what is coming. The mountain is growing so hot inside that it melts off its snowy covering; and soon it will burst forth with smoke and steam, and red-hot stones, and earthquakes which will shake the ground, and roars that will be heard, it may be, hundreds of miles away.

QUESTIONS.—What cities lay round Vesuvius long ago? Where is it? Near what city? When was the first known eruption? What had happened nine years before? What man of science lost his life there? Can you tell the story? What cities were destroyed? Is anything found in their ruins now? What happened in Java one hundred years ago? What happened in Quito in 1698? What can you tell about Cotopaxi?

AN INCIDENT.—*Norman Macleod.*

jour-neyed in-ci-dent ea-ger-ly boun-ti-ful

A FRIEND told me this incident the other day. Coming down a high mountain in Greece, very wearied and very thirsty, he met a shepherd who had been down in the valley, filling his jar with water. This supply was to last him twenty-four hours, as his hut was near the summit of the mountain. He was a wild-looking fellow, more like a robber than a person from whom one would expect to receive any kindness. My friend asked for a drink. "I have journeyed a long way for this,"

said the shepherd, "and cannot return for more, and the day is so hot too—but—yes—drink!" and he held the jar to the stranger's lips, who could not resist quaffing long and eagerly of the spring water. He felt so grateful that he offered the poor shepherd money. But the shepherd replied, "No, no, sir; not a farthing. I to take money for giving you a little of that which is the bountiful gift of God! You are welcome to it!" and smiling he passed on his way.

POLONIUS'S ADVICE.—*Shakspere.*

GIVE thy thoughts no tongue,
Nor any unproportioned thought his act.
Be thou familiar, but by no means vulgar.
The friends thou hast, and their adoption tried,
Grapple them to thy soul with hooks of steel;
But do not dull thy palm with entertainment
Of each new-hatched, unfledged comrade. Beware
Of entrance to a quarrel: but, being in,
Bear 't that the opposed may beware of thee.
Give every man thine ear, but few thy voice:
Take each man's censure, but reserve thy judgment.
Costly thy habit as thy purse can buy,
But not expressed in fancy; rich, not gaudy:
For the apparel oft proclaims the man;
And they in France of the best rank and station
Are of a most select and generous chief in that.
Neither a borrower, nor a lender be;
For loan oft loses both itself and friend;
And borrowing dulls the edge of husbandry.
This above all,—To thine ownself be true;
And it must follow, as the night the day,
Thou canst not then be false to any man.

THE EARS OF WHEAT.

Grimm.

Ages upon ages ago, when the angels used to wander on earth, the fruitfulness of the ground was much greater than it is now. Then the ears of wheat bore, not fifty or sixty fold, but four times five hundred fold. Then the corn grew from the bottom of the stalk to the top; and as long as the stalk was, so long were the ears. But as men always do in the midst of their abundance, they forgot the blessing that came from God, and became idle and selfish.

One day a woman went to a corn-field, and her little child who was with her fell into a puddle and soiled her frock. The mother tore off a handful of wheat-ears, and cleaned her daughter's dress with them. Just then an angel passed by and saw her. He became very angry, and declared to her that, henceforth, the wheat-stalks

should no longer produce ears, "for," said he, "you mortals are not worthy of heaven's gifts." The by-standers who heard him fell on their knees, weeping and praying him to leave the wheat-stalks alone, if not for themselves, yet for the poor fowls, who, otherwise, must perish of hunger. The angel pitied their distress and granted part of their prayer; and from that day the ears of wheat have grown as they do now.

QUESTIONS.—What does this fable say about wheat long ago? How much did it yield? What were the ears like? How did they come to be shortened? What did the woman do who angered the angel? How did he come to spare us even what we have?

THE LAND OF CONTRADICTIONS.—*Anon.*

con-tra-ri-e-ties **des-per-ate** **vor-a-cious**
quad-ru-peds

THERE is a land in distant seas
Full of all contrarieties.
There beasts have mallards' bill and legs,
Have spurs like cocks, like hens lay eggs.
There parrots walk upon the ground,
And grass upon the trees is found;
On other trees—another wonder—
Leaves without upper side or under.
There, pears you'll scarce with hatchet cut;
Stones are outside the cherries put;
Swans are not white but black as soot;
There neither leaf, nor root, nor fruit,
Will any Christian palate suit;
Unless in desperate need you'll fill ye
With root of fern and stalk of lily.

There missiles to far distance sent
Come whizzing back from whence they went.
There a voracious ewe sheep crams
Her paunch with flesh of tender lambs;
While 'stead of bread, and beef, and broth,
Men feast on many a roasted moth
There quadrupeds go on two feet,
And yet few quadrupeds so fleet.
There, birds, although they cannot fly,
In swiftness with the greyhound vie.
With equal wonder you may see
The foxes fly from tree to tree;
And what they value most, so wary,
These foxes in their pockets carry.
The sun when you to face him turn ye,
From right to left performs his journey.
The north winds scorch, but when the breeze is
Full from the south, why, then it freezes.
Now, of what place can such strange tales
Be told with truth but New South Wales?

This lesson may give matter for lengthened examination, before the children understand all the allusions, and will prove full of instruction when well studied.

OBJECT LESSON.

THE LIBRARY.—Were books alway like our books?

No. The ancients wrote them on skins, parchment, or papyrus.

What is parchment?

Sheep or goats' skin specially prepared.

What is papyrus?

A reed growing in Egypt, now very scarce. Our word paper comes from it. It was on sheets made from it most ancient books in Europe were written.

Are the leaves of trees ever used?

Yes. In the East they still write on leaves of the palm-tree.

What shape were ancient books?

They were in rolls, and were read by unrolling them.

When was cotton paper invented?

In the twelfth century, but it was not much used till the discovery of printing made a demand for it.

Who were the first printers of whom we know?

The Chinese.

When was the first book printed in Europe?

In A.D. 1450 or 1452.

What was it?

The Bible.

Who was the first English printer?

William Caxton. The first English book was printed by him in the Almonry at Westminster Abbey.

How were books made before printing was found out?

They were written by hand.

Could people ever be educated in great numbers if this were the way of making books now?

No, for both in price and in their fewness, written books would be beyond the reach of most people.

LIBRARIES.—Kiriath-Sepher, *Book City*, in Canaan (Jud. j. 11). Ancient Thebes. Pergamos, Asia Minor (hence *parchment*), 200,000 vols., B.C. 133. Alexandria, twice destroyed; by fire (B.C. 48), 400,000 vols.; by Caliph Omar (A.D. 634), 700,000 vols. Bodleian, Oxford, 400,000 vols. Royal Library, Paris, 800,000 vols. in 1860. British Museum Library, London, over 600,000 vols.

A Letter.

7, Kennington Road,
London,
January 1, 1873.

Dear Henry,

A Happy New Year to you, and may I often have to say it, for your sake and my own. We have had a famous time of it since the Holidays began. George and Mary came home, and the three of us have been to a great many places, for Uncle is here from the country, and as he has nothing else to do but enjoy himself, he has taken us with him to more sights and amusements than we ever had at Christmas time before.

It has been cold here, but not cold enough

to freeze the water in the Parks, so as to let us have skating. My each canary is dead. They forgot to cover it up with a cloth one cold night, and it was ill in the morning and died in a day or two.

In another fortnight we shall be at School again, and I shall try to work harder than I have done, for they are very much grieved here to find me so low in my class.

I remain, dear Henry,

Your sincere friend,

Robert Warrington.

To Mr. Henry Simpson,

16, Birmingham Street,

Edinburgh.

LESSONS ON SPECIFIC SUBJECTS.

PHYSICS.—MATTER AND MOTION.

1. THE DIFFERENT STATES OF MATTER.

1. Matter—that is, the material of which all things consist—presents itself to us in one of three different conditions: either solid, as in a stone; liquid, as in water; or gaseous, as in the air we breathe.

2. Bodies are not, however, limited to any one form. For example, oxygen—which forms part of the air, as one of its gases—forms part of water as well, and part also of many solid bodies; so that we find it in all the three conditions—solid, liquid, and gaseous.

3. A solid is a body made up of particles more difficult to separate from each other than the particles of a liquid. A liquid, again, is a body whose particles are less easily separated from each other than those of a gas. You see this constantly in daily life; for while you can pass your hand through the air without feeling almost any resistance, you cannot pass it without some effort through water, and it is impossible to pass it through a solid body. All bodies are composed of extremely minute atoms, which, in a solid, hold together so that they require strong force to divide them; whereas, in a liquid, they separate from each other, and combine into new relations from very slight disturbances, as when you part water with your finger. In gases, again, the separation of the particles is still more easy; as, for example, when we move a wand through the air without our feeling almost any hindrance. We need to saw asunder a solid body, or split it; but a child's toy-boat parts the surface of a pool, and a butterfly cleaves the air at its will.

2. THE GENERAL PROPERTIES OF MATTER.

1. **Divisibility.**—All substances are capable of indefinite division. The finest dust into which a stone may be ground proves, when seen under a microscope, to be a block, which might be still further divided to any extent, if we had the means of doing so. A grain of salt dissolved in a glassful of water is so divided that the minutest

drop contains a particle of it. The thinnest part of a soap bubble was shown by Sir Isaac Newton to be not more than the 2,500,000th part of an inch in thickness, at the moment before it bursts. A hundred threads spun by a spider do not make up the twenty-fifth of an inch in thickness, and gold may be so drawn out that a coating of it, weighing only the 432,000,000,000th part of an ounce, appears, under the microscope, a continuous plate of solid gold, on the surface of a portion of silver wire which it has been used to gild. The odours of bodies are caused by minute particles of them which fly off into the air and come in contact with our organs of smell, but so inconceivably small are these atoms, though they affect us so powerfully, that the substances which yield them, are in many cases, not perceptibly lighter after long periods of exposure. A piece of musk, for instance, after scenting a chamber for months, is found to weigh so little less that our finest scales cannot detect any loss it has sustained. And how small must the coloured particles of a glass of wine be when a glassful will tinge the whole of a great jar of water? How small must the particles of water be which rise in vapour from the earth continually without our seeing them, or without the finest microscope being able to detect them? A single drop of stagnant water has been calculated to contain not fewer than 500,000,000 of living creatures. How inconceivably minute must the vessels of their bodies be, and what shall we think of the particles of food which circulate through such tubes and ducts?

2. **Compressibility.**—All bodies may be pressed into smaller bulk, to a greater or less degree, in proportion to the spaces between the atoms of which they are composed, the **density**, or thickness, of any body, and its **resistance** to further pressure, of course increasing in proportion as it may have been compressed. Metals, when pressed by the die into medals or coins, are sensibly smaller than they were before. As to sponge, cork, and the like, we all know how they may be squeezed into very small bulk. Air and other gases are the most compressible substances in nature. You may readily see this in the case of air by pressing a tumbler, mouth downwards, into a vessel of water. The water will rise in the tumbler in proportion to the depth to which you immerse it, the air having been forced into smaller bulk by the greater or less weight of water pressing against it. An empty bottle, corked as tightly as possible, will have the air so compressed that the cork will be forced in, if the bottle be sunk deep into the sea. Water and other liquids are, on the other hand, the most

incompressible of substances. A pressure of 15,000 pounds on the square inch of water makes it lose only a twentieth part of its bulk. Beyond a very slight degree it is, in fact, virtually incompressible. Thus, if twenty cubic inches (that is, twenty inches measured as we would measure each side of ivory dice) were poured into an iron cannon, with sides three inches thick, and it were tried to squeeze them into the bulk of nineteen cubic inches, the cannon would burst, but the water would not yield.

3. **Elasticity.**—Some bodies come back to their original form after having been compressed; some retain the form compression has given them. The former are called *elastic*, the latter *non-elastic*. Air is perfectly elastic, for however often you compress it, it will always return to its original bulk, as soon as the pressure ceases. Other gases show the same characteristic. Caoutchouc, feathers, and hair, and many kinds of wood and metals, particularly steel, are highly elastic. When you bend a steel spring, the under or concave side of the arch is compressed, and the outer or convex side is stretched, and it is the effort of both sides to regain their original condition—that is, it is their elasticity, which makes the spring straighten itself again the moment you leave it free to do so. A curious illustration of the elasticity of ivory is seen if you first lay an ivory ball, coated with lamp-black, gently, on a marble slab, and afterwards let it fall from a height on the slab. When laid gently down it will make only a round black speck on the marble, but when let fall from a height it will make a round black spot, much larger, and this spot will increase in size according to the height from which the ball falls. The cause is that the ivory is flattened when it falls on the slab from a height, and marks the degree to which it is so,—though, being elastic, it immediately regains its round shape. Elasticity is of great use in the arts and manufactures. Watches go by the elasticity of their springs; our vehicles are made comfortable from the same cause, and so with many other applications of this property.

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3. PROPERTIES OF MATTER.

1. **Expansibility** is the property of bodies by which they increase in size under certain conditions. It is chiefly seen in the effects of heat on them. Iron expands greatly when heated, and so do many other solids. But it is in liquids we see this property

most developed, as, for instance, in water, a cubic inch of which expands into 1,600 cubic inches of steam when boiled.

2. Impenetrability.—By this term is meant the fact that no two bodies can occupy the same place at the same time. It does not mean that bodies are impenetrable; but, simply, that every body occupies some portion of space to the exclusion of any other body. If you thrust your hand into water, the water gives way, but where your hand is there is no water, but only your hand. If you drive a post into the ground there is no ground where the post is, but only the post. You only thrust aside the particles of the water or thrust together those of the wood. Yet in some cases there seems a contradiction to this rule, as when we mix a given quantity of water and of sulphuric acid together—the two taking up less space in union, than they did when apart. The explanation of this, however, seems to be, that the particles of the one slip into vacant spaces, inconceivably minute indeed, but from that very fact inconceivably numerous, between the particles of the other.

3. Porousness or **Porosity**, and **Density.**—A pore, in common language, is a small pipe or duct in a body, formed by a vacant space between its particles, and large enough to be seen. Sponge, bread, sugar, are illustrations of this, and are examples of very porous substances. But, in reality, all bodies are more or less porous (for all admit of compression or of expansion) and thus there must be spaces between their particles. Those bodies whose particles are closest together we call **dense**, that is, there are more atoms in a given space in them than in other bodies which are less dense, and, as *weight* depends on the quantity of matter in a body, to speak of density is, in effect, to speak of weight. Some bodies show their porousness only under exceptional circumstances, but even those in which we should least expect it are found to be porous, when submitted to adequate tests. Thus hollow globes of gold, or iron, filled with water, and then subjected to great pressure, become covered with dew, forced through them. Filtration, which is constantly going on in a great scale in nature, and is widely used in common life, depends upon porosity.

4. Resistance, or **Inertia**, or **Rest**, or **Inactivity**, are the names for the fact that dead, or inorganic matter, has no power in itself to change its state. A body at rest cannot put itself in motion; a body in motion would continue so, if no external influence hindered. In either case, a body *resists* any change of state with a force in proportion to the matter it contains, or to the

degree of motion to be given or arrested. Sir Isaac Newton calls it "the innate," or *inborn* "force of matter—a power of resisting, by which every body, as much as in it lies, endeavours to persevere in its present state, whether it be of rest, or of moving uniformly forward in a straight line." It is the supreme law of the material world that all bodies are absolutely passive, that is, that they have no activity in themselves, but merely *suffer* it to be exerted on them from without, and would continue for ever thus at rest, unless disturbed by some external force.

We have illustrations of this law of matter in the strain and effort needed to start a laden waggon, and in the ease with which it is kept in motion when this first resistance is overcome, and also in the impossibility of stopping it at once when wished, without an equal effort. So in the jerk with which any one on horseback is thrown forward if the horse suddenly stop, or backward if it suddenly spring forward. The head of the rider in either case remains where it was, by the property of **Resistance**, while the lower part of his body is moved quickly forward or backward, and thus he is violently overbalanced, and, most likely, thrown with force on the ground. In the same way, if one leap straight out from a carriage in motion, his feet will be stopped when he touches the earth, while his body retains the motion it had in the carriage, and he will necessarily be flung heavily on the earth. The same principle is seen in a carpenter's forcing the handle into a hammer head by striking the end of the handle violently on his bench. The hammer head does not share the motion imparted, to any great extent, and thus the handle is forced into it. A coin placed on a card, over a wide-mouthed bottle, will fall into the bottle, if the card be struck from below it by a smart fillip of the finger.

5. The law of resistance is also seen in the way in which motion is checked and stopped, as much as in the difficulty in its commencement. A humming-top will spin far longer on a polished table than on a rough floor, the reason being that the resistance offered by the one is less than that offered by the other. But if it be set to spin under a vessel from which the air has been drawn by an air pump, it will spin very much longer than on the smoothest surface where it is exposed to the resistance or friction, that is, *to the rubbing* of the air. If you could perfectly prevent all friction, or resistance to its motion, it would go on for ever. Thus, if a leaden bullet hung by a thread in an exhausted receiver—a glass vessel from which the air has been pumped out—be made to swing to and fro, it will continue to do so for a whole day, and will only

cease at all because our contrivances cannot entirely remove the friction which checks its motion. Hence, motion, once begun, would never cease, but for hindrances from without, just as a body at rest would never begin to move if no outside force were brought to bear on it.

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4. INDESTRUCTIBILITY OF MATTER.

1. No particle of matter is at any time destroyed. It may take new forms, but it never ceases to exist. If we boil water, it disappears, but the particles of which it consisted are only changed into vapour, not destroyed, for if this vapour be carefully collected again, and condensed, the water is recovered without any loss of its weight. If we burn a piece of paper or wood in a close vessel, we find water and an acid, different kinds of gases, and black charred remains, which are charcoal; but if the water, the acid, the gases, and the charcoal be collected and weighed, they will be found to weigh exactly the same as the paper or wood did before it was burned. It is the same with the bodies of living creatures, and with all vegetation. At death, the body is dissolved into its elements, so that it takes new forms, but not a particle is lost. Dead plants or animals enrich the soil, and yield gases to the air; other plants spring from the food thus yielded by decay; living creatures consume the plants thus produced; and so, in a constant circle, death supports life, and life passes to death. But no atom of matter can be destroyed, or ever ceases to be.

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5. MEASURES OF SPACE.

1. In England, the system of **Measures of Space** is based on no principle, but on the division of what is called a foot into twelve inches, and the combination of such feet and inches into other arbitrary divisions. We have the yard, foot, inch, ell, nail, knot, league; the geographical, Scotch, Irish, and common miles; three sorts of fathoms, and so on, in what a committee appointed by the House of Commons justly called "a system of legalised disorder."

2. The only scientific and sensible scheme of measures of space is that called the Metric System, which was invented in France, in 1790, by a committee of scientific men appointed by the Constitutional Assembly of that country to contrive some scheme which

would do away with the want of uniformity and of system prevailing up to that time in French measures, as it prevails to this day in ours.

As the result of their labours, the **Metre**, which is equal to a ten-millionth part of the distance between the poles and the equator, was made the unit of length, that is, the starting-point and base of measures of space. All higher and lower measures start upwards or downwards from the **Metre**, by a regular progression or descent of tenths, each higher measure being ten times greater than the next lower one, and each lower measure ten times less than the next higher one.

This system, which has been adopted in France as the only legal one since 1840,—though it was in use, in connection with the old measures, from 1801,—has already been introduced into most countries of Europe, and it is hoped will, after a time, be adopted in Britain also.

At present, the only standard by which British measures of space are fixed, is that a yard shall be "thirty-six parts" (that is, inches), "of which there are 39·1373 in the length of a pendulum, vibrating seconds of mean time* in the latitude of London, *in vacuo*,† at a temperature of 62° Fahrenheit." Compared with the French system of tenths, based on the metre, how artificial and defective all this seems?

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6. MEASURES OF TIME.

1. The motions of the heavenly bodies are no doubt the best standard for measuring time in lengthened periods, but to count such short divisions as hours, minutes, and seconds, we need the aid of the skilful contrivances of wise and learned men.

These are based on two principles; in the one case, on the principle that a body suspended from a point, and set in motion, will swing an equal distance on each side of the point from which it hangs. The instrument in which this is embodied is the **pendulum**, which takes a second to make each beat. A weight is hung to the works of the clock to maintain the motion, which would, of course, soon cease, by the resistance of the air, &c.; but the measure of time is not the weight, but the pendulum. The length

* That is, seconds of the day of twenty-four hours, as distinguished from the day measured by the successive daily returns of the sun to the meridian —the part of the heavens directly overhead, which marks the *mid-day*.

† That is, in an exhausted receiver.

of time taken for each beat depends on the length of the pendulum, a shorter one making more in a given time than a longer one, so that to make just one beat exactly, in a second, the pendulum must be of a certain fixed length.

2. It is found that a pendulum of a given length does not make the same number of beats at different parts of the earth's surface. At the equator it makes fewer, and at the Polar regions more. By means of this fact the flattened shape of the earth may be proved, for, as the rate of the motion of the pendulum depends on that attraction of the earth which we call the "force of gravity," and as this attraction grows less the further anything is from the earth's centre, it becomes evident that the greater speed of the pendulum near the Poles, rising as it does from the greater attraction there, will show that the Poles are nearer the centre of the earth than the equator is. But though the shape of the earth may be thus ascertained by the varying motions of the pendulum, the more exact method of measuring degrees of longitude on different parallels of latitude is that actually adopted by scientific men.

3. The **Spring** is the other measure of time now in use. The regulation of the elasticity which a spring of steel possesses, that is, of the tendency to *spring back* to its original form or position, is the principle on which this use of it rests. By the aid of a balance-wheel, and other ingenious contrivances, a spring placed in clocks and watches, when tightly wound together by a key, will press so steadily outwards again, by its elasticity, that time may be accurately measured by its thus expanding. When the watch is wound up, the spring fills only a small part of the centre of the little round box you see in a watch; but when it has run down, the spring has pressed outwards till it has quite filled the box, and thus cannot any longer keep the wheels in motion, that is, cannot keep the clock or watch *going* any longer.

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7. MOTION.

1. There are many degrees of velocity or speed of motion. The second-hand of a watch goes round its circle while the minute-hand moves a single point, and while the short hand passes from one hour to the next, the minute-hand goes round the whole dial. A snail scarcely advances at all in a second, but a swift runner passes over 20 feet, a greyhound over 50 or 60, a hurricane over

180, sound over 1,125 feet, and light over about 190,000 miles a second.

2. The velocity or swiftness of a moving body is either *increasing* or *retarded* motion. In the latter, some force steadily resists the body that is in motion, so as to make it move more slowly each moment, as the air resists and thus retards the flight of a ball through it. The velocity is *uniform* when an equal space is always passed over in the same time, and it is *increased* or *accelerated* when it grows steadily greater each moment.

3. The power which puts a body in motion is called *force*, and we speak of its exerting a *pressure* when brought to bear on anything at rest. *Force* and *pressure* thus, in effect, mean the same thing, and as *weight* is the kind of force with which we are most familiar, we usually speak of the amount of a *force* or *pressure* as so much weight of ounces, pounds, etc.

4. When a body is in motion, it gains a power of putting other bodies in motion also; which is the same as saying that it gains *force*, and to this force of a moving body the name *momentum*, or *quantity of motion*, is given. But *momentum* depends on the mass or weight of a body in motion, and not merely on its velocity, that is, on the swiftness with which it moves. Thus, if two cannon-balls rush forward at the same rate, the one weighing twelve pounds, the other weighing twenty-four, we say that the heavier one has twice the *force* or *momentum* of the lighter one. When it is desired to express the different *momenta* of two moving bodies, the *weight* of each has, therefore, to be multiplied by its velocity, for the force with which either would act on another body, or the force that has been needed to put it, itself, in motion, is necessarily to be measured by the weight that had to be moved at first, and by the swiftness of the motion it acquires. In the case of a cannon-ball of 12 pounds, which moves 80 feet in a second, the momentum is found by multiplying 12 by 80. The momentum is thus 960. If another ball, weighing 24 pounds, fly 80 feet in a second, its momentum will be $24 \times 80 = 1{,}920$, or double that of the other.

PHYSICS.—LIGHT AND HEAT.

LIGHT.

I.

1. (1.) The great source of light, to man, is the sun, but there are inferior sources which also yield more or less. Thus (2), the

fixed stars are suns to their systems, though only specks of brightness to us. (3.) Heat causes light, for all bodies, as soon as they are brought to a certain heat, become luminous. (4.) So does electricity. (5.) Many of the lower animals emit light, as fish, the firefly, or the glow-worm; and (6) so do many plants, especially the Rhizomorpha, which grow in mines. (6.) There is also a light from the decay of the bodies of various creatures, as is seen in the blue light often rising from recent graves, and the light from decaying fish.. (7.) Wood, when it is rotting, is likewise often luminous.

The light of the moon is derived from the sun, the moon, like the earth, having no light of its own—that is, being *non-luminous.*

2. Though heat and light almost always go together, the one is sometimes found separate from the other, as in the light of the moon, and in that of various insects, which have no heat, or, at any rate, so little that the amount is not perceptible.

3. Light is supposed by some to be caused by the luminous body from which it proceeds scattering forth in all directions inconceivably minute shining particles, which strike on the eye, and thus produce vision. By others it is supposed that a wonderfully subtle fluid, called *ether*, pervades all space, and causes light by being set in motion, in waves, which reach the eye; just as sound is caused by vibrations, or waves of air set in motion by the body from which the sound proceeds, and travelling from it to the ear. This theory is called the *undulatory*—from *unda* (L.), a *wave;* and the other the *material* theory, because it supposes light not to be mere waves or undulations, but a material substance. It is also called the *theory of emission*, or *sending forth*, from the idea that light is something emitted, or sent forth, from the luminous body.

4. Light always moves in straight lines, as is proved by the fact that while you can see an object through a narrow tube if straight, you cannot see it if the tube be at all bent. It travels with a wonderful swiftness, passing, in a single second, through a distance variously estimated at from 168,000 to 191,000 miles, and, therefore, taking only from eight to nine minutes in travelling from the sun to the earth, a distance of about 91,500,000 miles.

5. Rays of light, when they come in contact with bodies, are either absorbed,* that is drunk *in*, and pass no farther, or they pass through it, or, finally, they are reflected,† or *bent back.*

* From (L.) *absorbeo*, to *drink in.*
† From (L.) *reflecto, to bend back.*

6. When all the rays of light which fall on a body are absorbed, they disappear entirely, and it appears perfectly black, as in the case of lamp-black, which is the substance that most perfectly absorbs light. But the far greater number of bodies absorb only some part and reflect the rest; metals, if bright, reflect light better than any thing else.

7. It is by the reflection of light in every direction, from every visible point of a body, that the body becomes visible, and it is by these reflected rays entering our eye that the body becomes visible to us. We see things at all only by their reflecting the rays of light that fall on them.

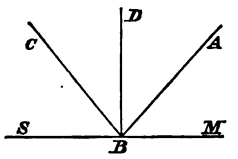

Fig. 4.

S M here represents a mirror laid flat; D B a perpendicular line. Now, if a ray of light fall on the mirror in the direction A B, it will be reflected in the line B C, which is exactly on the same slant with the perpendicular line, or *forms the same angle.*

8. If a ray of light fall at a certain slant on a flat mirror which lies flat on a table, it is reflected from the mirror in exactly the same slant in the opposite direction, as in Fig. 4.

Through this law it follows that the rays slant from a mirror as if they issued from a point as far behind the surface of the mirror as the object is from which they proceeded, and thus the image seen appears to be as far behind the mirror as that which throws it is before it.

9. If two or more mirrors be placed in such positions that the light from each shall be reflected on the others, the images formed will be as many times repeated as they are thus reflected. This is the principle of the Kaleidoscope, which is just an arrangement of mirrors so as to form a number of images of the same objects.

LIGHT.

II.

REFLECTION—SHADOWS.

1. To explain more clearly the formation of an image of any thing in a flat mirror, let us study the following illustration, Fig. 5.

S M is, here, a plane or level mirror, lying flat. F G is the eye of one looking into the mirror. L N (above the mirror) is an arrow reflected into it, at the image of which the eye is looking.

Now, notice that though rays are passing from every point of

the arrow to the mirror, comparatively few of them can enter the eye. Only those, in fact, which are reflected from the portions of the mirror from A to B, and from C to D can do so. As the slant or angle at which the rays are reflected must be exactly the same as that at which they fall on the mirror, the ray L A must be reflected to the eye along the line A F, and the ray L B must be reflected to it in the direction B G. In the same way the rays N C and N D must be reflected into the eye along the lines C F and D G.

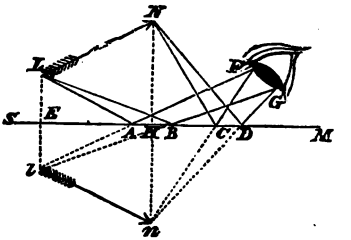

Fig. 5.

If, now, you look, you will see that the reflections of the first two rays A F and B G (the reflections of the feather end of the arrow) enter the eye as if they came from the point *l*, where the dotted lines meet, which is as far *behind* the mirror as L (the arrow feather) is *before* it.

In the same way the rays from the tip of the arrow, which enter the eye by the lines C F and D G, do so as if they came from the point n, at the end of the other dotted lines—which, again, is just as far *behind* the mirror as the tip of the arrow is *before* it.

Turn the illustration sideways and you will see this clearly, for you will notice that it is just as far from E to L as it is from E to l, and just as far from H to N, as it is from H to n, and just as far from l to n, inside the mirror, as it is from L to N on the arrow before it.

Thus the image must have the same position in the mirror as the arrow has before it, and it must be of the same size.

2. Any object that does not let the light pass through it, must, of course, stop those rays which shine on it, and, by preventing their shining beyond, cause darkness on the other side. This dark space is called the *shadow* of the object. We all know how, in the evening, when the gas is lit, if any one sit between us and it, he intercepts the rays of light and so throws the space next us, on the side of his body, which is away from the brightness, into deep shade. Our shadows, as we walk, are caused by our bodies coming in the way of the sunbeams which fall on the side of it next the sun, and preventing them from shining any farther. The darkness of night is only the shadow cast on the sky by the earth, when the sun shines on the side of it that is away from us.

HEAT.

I.

There are three ways in which **Heat** may be transmitted or diffused.

1. It may be diffused, or spread, through the whole mass of a body by being communicated from one particle of it to another till all are equally hot, which is called the **conduction** of heat. If you heat a knitting-needle or a piece of iron wire to redness at one end, the other speedily gets so hot that you cannot hold it, though you would feel no inconvenience in holding a piece of wood of the same length if the other end of it were a-flame. This is because the iron is a good conductor of heat, and the wood a bad. Metals are the best conductors, while stones, earth, and glass conduct heat much less freely, and wood, straw, hair, the fibres of plants, and the articles made from them, are still more feeble conductors, such loose and porous bodies not allowing heat to pass quickly through them.

2. It is this power of conducting heat quickly that makes water boil faster in an iron vessel than in an earthen one, and that makes the hand cold on touching metal, the cause of the cold we feel being the rapidity with which the iron conducts away the heat of the hand. On the same principle, ice which is to be kept unmelted in hot weather is thickly covered with blankets, which are bad conductors, and prevent the outside warmth from getting to it, just as woollen clothes, in cold weather, keep us warm by preventing the heat of our bodies from escaping. The gardener when he covers roots of plants with straw, in winter, makes use, in the same way, of the fact that the heat of the earth cannot readily pass through straw, and thus the plants are kept from freezing even when all is frozen around.

3. The second mode of the transmission or diffusion of heat has been called **convection***, which means the *conveying* heat from one particle of a body to another. If some pieces of solid blue litmus, a colouring matter prepared from lichens—be put into a glass flask of water, and the water be heated over a spirit lamp, a current of water which the blue colour makes visible, begins to rise in the centre, and to ascend to the surface, bending over as it reaches it, and descending again, like the spray of a fountain, till it reaches the bottom, from which it again begins to rise and repeat the round. In this way the whole of the water becomes heated,

* From (L.) *con*, together, and *veho*, to carry.

for every part of it, in turn, is brought into contact, by this circulation, with the warmth of the lamp; rising as a warm current, as it becomes heated, and presently descending again and returning, after losing part of its heat on the air, the vessel, and the colder portions of the water, so that it is colder when it thus descends than the water which has immediately before been over the flame. Air and other gases are heated in the same way, as may be seen if a thermometer be put into a closed glass vessel, and a lamp applied to the vessel, above the thermometer. In that case, there is hardly any rise in the temperature, whereas if the heat be applied at the bottom and the thermometer be put at the top, the current of heated air which ascends very quickly raises the temperature.

3. **Radiation**, or the giving off heat in rays, is the third great means of the transmission of heat. It takes place in all hot bodies as they cool, as every one feels when he comes near anything hot, and it continues until the heat is reduced to that of the air around. The rate at which heat radiates from any body depends, however, very greatly, on the surface of the body, a bright metallic vessel giving it off much less rapidly than a dull or blackened one, as we see in the case of hot water in a polished urn compared with that of water, as hot, in a sooty kettle. The former retains its warmth much longer than the latter. Radiation is also slower or faster as the surface of a body is a good or bad conductor of heat. In the case of the bright metal vessel the heat is retained, in spite of the metal being a good conductor, by the brightness preventing radiation, but in other cases slow radiation is the result of the slow passage of heat through the surface to the cold air outside. A remarkable illustration of this is seen in what is called the Norwegian Stove, which is simply a box lined with felt to the thickness of from four to six inches. A leg of mutton put into a pot and brought just to boiling over a fire, will be perfectly cooked, without any more heat being required, by merely putting the pot into such a "stove." The reason of this is that the heat passes very slowly through the felt, and radiates very slowly from its surface.

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2. EFFECTS OF HEAT.

1. **Expansion** is one of the most common visible effects of heat.

2. The state of all the matter which makes up the earth is entirely dependent on heat. If the whole bulk of the world were

to become several thousand times hotter than boiling water, the attraction by which the particles forming all things are held together would cease, and everything become fluid or even pass into gases or vapour. If, on the other hand, the temperature of the earth were to sink a few thousand times lower than it is, the atoms of which all things consist would cling so firmly together that no power we have could force them apart. Thus the state of all matter, whether solid, liquid, or gaseous, entirely depends upon heat.

3. The expansion of *solids* by heat may be constantly noticed, if attention be paid to the subject. It is best seen in the metals, as, for instance, in iron, which swells or expands with heat in a striking degree. A common illustration of this is to take an iron ball, and an iron ring a little too small for the ball to pass through, and then heat the ring, after which the ball will pass through it with ease. Where the beams or framework binding together the opposite walls of buildings is of iron, this property, in case of a fire, is often disastrous in its effects, the iron expanding with the heat and forcing out the walls between which it stretches. The cracking of a tumbler when hot water is poured into it is due to the lower particles of the glass, and those on the inner side of the tumbler, getting heated, and hence expanding, sooner than the upper and outer particles. The unequal expansion forces the less expanded portions apart and thus splits the whole.

The expansion of **liquids** is readily shown. If you heat water in a glass flask filled with it, it will expand as it heats, till it runs over. Or if you take a long glass tube with a bulb at one end, and, after filling the bulb with spirits of wine, put it in hot water, the spirits of wine will rise in the tube as it grows warm, shrinking back again into the bulb as it cools when the tube is removed from the hot water. The expansion of **gases** is shown if a tightly closed bladder half full of air be held to the fire. The heat will presently expand the air still in it till the bladder is quite full.

4. The force with which bodies expand by heat is so great that the strongest vessels, filled with air or water, if tightly closed and then heated, often burst, as in the case of the boilers of machinery.

5. Almost every solid or liquid has a special expansibility. Among solids, the metals expand most; zinc standing first as to amount, and bismuth and antimony, apparently, lowest. Glass, brick, china, marble, stone, and the like, show little power of expansion. Gases differ from both solids and liquids by expanding nearly equally under the same amount of heat. Air, or any other gas, expands

about a third when raised from the freezing-point (32°) to the boiling (212°), whereas alcohol expands only one 1-8th, mercury 1-35th, and water 1-23rd.

6. Water, which is the very symbol of the liquid condition of matter, becomes solid when the temperature falls below 32°—which is, therefore, called the freezing-point,—just as it turns into vapour at the boiling-point, 212°, at which one square inch of water is changed into 1,600 times its bulk of steam. If some boiling water be allowed to cool in a very cold atmosphere it continues to contract till it reaches 39°, that is, till it is within a few degrees of freezing, but it then begins to expand again,* and continues to do so till it reaches 32°, the freezing-point, and it suddenly swells still more as it turns into ice. This is the reason that ice does not sink in water, but floats, and that our ponds and rivers are not filled up with it in winter, but are only frozen on the surface where the sun can reach and melt it on the return of warmer weather. But for this all our streams and lakes would, in time, become solid, and all things would in the end perish. The force with which water expands when thus freezing is the cause of our pipes bursting in winter, and this force is even used in some countries to split blocks of stone from their beds in the quarries. Holes are bored in the mass, and then filled with water which is left to freeze, and its expansion as it becomes ice is found sufficient to separate the block from the body of the rock.

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3. MELTING.

1. As we have seen, the lowering of the heat of the globe sufficiently would turn every liquid and fluid into a solid, and hence it must follow that what we call liquids are bodies in which there is a certain amount of heat, though we may not be able to feel it. The heat thus, as it were, laid up in them, is called *latent* heat, or heat which *lies hid.*†

It seems strange to think of heat lying hid so that it cannot be felt, but it is certain that it does so. For example, if you take an ounce of water at 172° of heat, and put into it an ounce of snow at 32°, the snow will all be melted, and two ounces of water at 32° will be formed. Thus the warm water must have lost 140° of its heat, which have changed the snow into water, but yet have not raised the temperature of the whole two ounces above that of the

* At 39° 2′. † From (L.) *lateo*, to lie hid.

snow when unmelted. It is thus clear that water from melted ice has in it 140° of latent or hidden heat, which keep it in the liquid form. The same thing is shown if you melt snow which is exactly 32°, in a vessel, on a stove. The water produced by its melting will still be only 32°, all the heat imparted to the snow having only been sufficient to turn it from solid water to liquid. Thus bodies may absorb—that is, drink in—heat without becoming hotter, so far as we can feel, but they are turned by it from a denser, or heavier, to a lighter state. When water is spilt on the ground on a hot day, it presently begins to evaporate, or turn into vapour, and it does so by absorbing a large amount of heat from the air and earth around, as may be felt by the coolness that follows. It is in this way, also, that rain cools the air by each drop absorbing some of the heat from the atmosphere, as it passes through it, and from the ground, when it falls on it.

2. A striking example of latent or hidden heat being changed into *sensible* heat, or heat which our *senses* can feel, is seen when water is poured over unslacked lime. The water does not *wet* the lime, but unites, or combines, with it, and becomes a solid, giving off, as it does so, the heat which had kept it liquid, but which was latent, or hidden, and unfelt, till now. You remember that water, in turning from a solid, that is, from ice, to liquid, absorbs 140° of heat. This heat it gives off on again turning solid by uniting with the lime.

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4. BOILING, OR EBULLITION.*

1. Solid bodies, when heated to a certain degree, become liquid, but some take much less heat to make them become so than others. For instance, alcohol boils when heated to 172°; water when heated to 212°; silver needs to be made nearly nine times hotter before it melts; gold about ten and a half times; bar iron about thirteen and a half times. But every substance has its own melting point, from which it never varies.

2. To turn a pound of water into steam by boiling, as much heat is required as would have raised the water to about 1,000° of heat, if it had not passed into steam. Yet neither the water nor the steam ever becomes hotter than 212°—the point at which water boils. The 1,000° of heat required to boil off the pound of water have thus been absorbed by the steam, and remain latent in it, which is strikingly proved when the steam is again condensed into water,

* From Latin *e*, out, and *bullio*, to boil.

as in steam-engine boilers, the whole 1,000° of latent heat being then given off again by the steam, as sensible heat.

3. Two causes oppose the change of water, when heated, into steam or vapour—first, the force with which its own particles hold together, that is, their *cohesion;* * and, second, the pressure or weight of the atmosphere. It requires water to be heated to 212° before these two hindrances to its turning into vapour are overcome, and its particles, now free to separate, begin to do so. As soon as 212° of heat are reached, bells of vapour will be seen forming on the bottom of the vessel, and rising, by their lightness, to the surface, to which they give the bubbling motion known as *boiling*.

4. The boiling-point of water has been said to be 212°, but this is at the level of the sea. It is different if we boil it at a great height above the sea, as, for instance, on a high mountain. On the high table-land of Quito, in South America, where you are nearly nine thousand feet above the sea, water boils at 194°, which is not hot enough to boil an egg to hardness. But this is not the lowest heat at which water may be made to boil, for if some be put under a glass vessel from which the air has been drawn as perfectly as possible by an air-pump, it will boil with the heat of the hand! Let me explain how these things come about.

5. As is shown in paragraph third, water, when heated, has to overcome two hindrances before it can turn into vapour, one of these being the pressure, or weight, of the atmosphere. Now, as you ascend above the level of the sea, there is, of course, less air above you, and less pressure or weight from it, on water, or anything else. If, therefore, you heat water at such an elevation, it has less of such weight or pressure to overcome before it can turn into vapour, and, so, less heat is required to make it do so. So great, indeed, is the part which the weight of the atmosphere plays in our producing the change of water into vapour, that is, its boiling, that if this pressure or weight be removed by an air-pump, even the heat of the hand is enough, as we have seen, to overcome the other hindrance, that is, the cohesion of the particles of which water consists.

PHYSICS.—MAGNETISM.

ATTRACTION, REPULSION, AND POLARITY, AS ILLUSTRATED BY THE MAGNET.

1. The word *magnet* is derived from the word *magnesia*, which was the name given to an earth found at Magnesia, in Lydia, Asia

* From Latin *con*, together, and *hærio*, to stick.

Minor, thought by the ancients to have the power to attract, like a *magnet*, various principles from the air, when exposed to it. Magnets also got the name of *Lydian stone* from this locality, and, of this name, *load-stone*, a word still used at times instead of *magnet*, is thought by many to be a corruption; though others think it comes from a Saxon word, *lædan*, to *lead*.

2. All bodies are held together by what is called the mutual *attraction* of the particles of which they consist, that is, by a force in each which *draws it to* the others, and the others to it. In most things, this attraction is equally powerful in whatever position the particles be to each other, as in the case of a liquid, the particles of which show as much attraction for each other, that is, join together as thoroughly, however we may stir and confuse them. It does not matter which sides of them come together, the attraction is always equally perfect.

3. Besides attraction, however, there is another force of the very opposite nature, known as *repulsion*, from the fact that the particles of bodies, instead of being drawn and held together by it, are *repelled*, or *driven apart*, or *back* from each other by it. It is seen in the expansion of air by heat, which is just a tendency given to the particles of the air to fly off and keep apart from each other; or it may be seen when water is converted by heat into steam, which is just the loosening the particles of the water from each other, and a tendency given to them, in the same way, to fly apart.

4. We do not, however, find the attraction and repulsion of the particles of bodies the same in all cases. The particles of liquids attract each other equally, and those of gases repel each other equally, whatever be their position to each other; but there are other cases in which one side of each atom repels and the other attracts. We can never bring the particles of water into such positions to each other that they will not cohere, that is, cleave together, at once; but if we could take any two particles of a crystallized body, say of the crystals of alum, or of sugar-candy, or of ice, and turn them the reverse way to each other from that in which they join of their own accord, we should find that, instead of attracting, they violently repelled each other, and would not join together at all. Hence, if you stir a body while it is crystallizing, you destroy its power to do so. You cannot do with it as with water or other liquids. The one end of the atoms of a crystal, if we may so speak, has an attracting force; the other end a repulsive; and to this the name of *polar* force is given; because it is a force residing in the *poles*, or opposite ends of the crystal.

5. This will enable you to understand the characteristics of magnetism. There is a kind of iron ore, found in many countries, which has the property of attracting iron in a remarkable degree. In Sweden it exists so plentifully that mines of it are worked.

If this magnetic iron be rubbed in a certain way over a piece of *steel*, its peculiar magnetic properties will be communicated to the steel, which will thus become an *artificial magnet*. When the piece of steel is long and thin, like a needle, it is called a *magnetic needle*, which is the form in which magnetism is made use of in the mariner's compass.

6. If you dip a magnet into iron filings, it will be found that they will cling in great numbers to the two ends, that there will be fewer and fewer towards the middle, and none at all in the very centre. Thus, a magnet has always *two poles* or *points, in which all its power seems to lodge*. It is no matter what shape the magnet may be, these two poles are always found in it; and it is the same even with the smallest fragment of a magnet, if you break it.

7. If the south pole of a magnet be brought near the north pole of another, it will be instantly attracted to it, so that it will cling to it; but if a south pole be brought near another south pole, they will repel each other. Thus it is a law of magnetism that *like* poles repel or drive away each other, and that *unlike* poles attract each other. The meaning of the north pole and the south pole of a magnet is that—when a magnet is so balanced that it is free to turn horizontally on its centre,—as, for instance, in the case of a magnetic needle in a compass,—the one end will turn always to the north, and the other end always to the south. On this account the end that always points northward is called the north pole of the magnet, while that which always points south is called its south pole. This property is called *polarity*.

8. It is this law which has given us the mariner's compass, by which the direction of any place may be found out at sea, or anywhere on land, though there be nothing besides to tell it. If the north pole of the magnetic needle always point out the north, it is easy for a sailor to tell in what direction his ship is sailing, or for a traveller to guide himself through a pathless desert, or forest, by its help.

If it be asked how the earth attracts what we call the north pole of the needle towards the north, and what we call the south pole towards the south, the explanation is that the earth is full of magnetic force, and acts on the needle as if it were itself a great

magnet. But as the magnetic north pole of the earth really attracts the south pole of the needle, what we call its north pole should properly be called its south pole,* or else the northern geographical pole of the earth, that is, the pole marked in the north of our maps, should be called the southern *magnetic* pole.

The whole earth is, in fact, as if a great magnetic ocean were flowing in currents of magnetic force nearly from south to north, through its solid body. But it must not be thought, though it is thus spoken of as like an ocean with currents, that magnetism is a *substance;* it is only a mysterious force or power, which passes through any body whatever, without any diminution of its force. Thus, thick plates of glass, shellac, metals, wood, etc., may be placed between a magnet and a suspended needle, without the least alteration that can be seen, in what would have been the magnetic force, at the same distance, if there had been nothing between them. It is, thus, a *force*, not a *substance*, but further than saying this we can hardly go, so little do we yet know about it.

The streams of magnetic force which pulse through the earth do not come together at the Pole exactly, but at a point which moves in the course of years. Thus in 1660, the magnetic needle pointed due north and south, but from that date it began to pass to the west of the north pole, till in 1818, it had reached twenty-four and a half degrees west of it. Since then it has been slowly coming east again.

There is much more magnetic force in the earth in some parts than in others. Thus, a magnetic needle, left free to move as it likes, will be found in places at the same distance from the North Pole as London is, to bend downwards towards the earth, very much at its north end. This is called the *dip* or *inclination* of the needle, and marks the direction in which the force of terrestrial magnetism, that is, of the magnetism of the earth, acts most strongly. At the equator, there is no *dip*, or very little, the needle remaining nearly or quite horizontal or level; but it increases as you go from the equator, till, at the magnetic pole, it draws the needle quite perpendicular. This, you will see, is just like the strong magnetic power of ordinary magnets, which shows itself strong at the ends or poles, and is wanting at the centre, as the experiment with the steel filings, mentioned in paragraph six, showed.

9. To the magnetism of the earth we owe not only the mariner's compass, but also the electric telegraph, which, though called

* Continental writers do not apply the names north and south to the poles of the magnet as the English do, but very properly reverse the use.

electric, is really *electro-magnetic;* that is, it is made possible only by the intimate connection between electricity and magnetism, by which an electric battery can make a wire magnetic, when joined to it, the magnetism ceasing when the wire is disconnected from it. A fuller explanation will be given in a subsequent Reader.

10. It was formerly thought that iron, and a few other bodies, such as metal and cobalt, were the only ones affected by a magnet; but Faraday has shown that every body, without exception, is subject more or less to the magnetic influence. Magnetism is a mysterious force, pervading and affecting all things, and its laws are only being slowly revealed by the labours of scientific men.

THE DEATH-BED.—*Hood.*

We watch'd her breathing thro' the night,
Her breathing soft and low,
As in her breast the wave of life
Kept heaving to and fro.

So silently we seem'd to speak,
So slowly moved about,
As we had lent her half our powers
To eke her living out.

Our very hopes belied our fears,
Our fears our hopes belied—
We thought her dying when she slept,
And sleeping when she died.

For when the morn came dim and sad,
And chill with early showers,
Her quiet eyelids closed—she had
Another morn than ours.

THE SPARROW AND HIS FOUR CHILDREN.

Grimm.

dis cov-er-ed
cat-er-pil-lars
es-pec-ial-ly
sub-sis-tence

A SPARROW had four young ones in a swallow's nest, but just as they were fledged, some naughty boys discovered the nest and pushed the birds out. Fortunately a slight breeze was blowing at the time, and bore them up. But the old sparrow was sorry because her children were gone out into the world before she had warned them of its dangers, or taught them good manners.

In the next spring time a great many sparrows chanced to meet together in a field of corn, and among them the old sparrow happily met with his young ones, and took them home with him, with great joy. "Ah, my dear

children," he said to them, "what a trouble I have been in about you all the summer, while you faced the world without my advice; now, hear my words, and attend to your father, and take care of yourselves, for little birds must needs meet great dangers."

Thereupon he asked his eldest young one where he had been during the summer, and how he had kept himself. "I have been in a garden," he replied, "eating caterpillars and worms, till the cherries were ripe."

"Ah, my dear son," replied the old bird, "eating grubs is not so bad, but there is great danger in it; therefore keep a good look-out, especially if people come into the garden carrying long poles: they are hollow, and have a small hole at the top, out of which comes fire that will kill you."

"Yes, my dear father," replied the young sparrow, "but what if a green leaf be stuck with wax over that little hole?"

"Where have you seen it so?" inquired the father.

"In a merchant's garden," was the reply.

"Oh, my son," cried the old bird, "merchants are crafty people; truly you have been among the world's children, and have seen their cunning ways; take care now that you make good use of what you have learned, and do not be too confiding."

Then he asked the second young one where he had been. "At court," he replied.

"Sparrows and those sort of birds do not belong to such places as that," said the father; "at court there is much gold, velvet, silk, armour, harness,

and such birds as hawks, falcons, and owls. Keep you to the stables where they store the oats, or thrash out the corn, and then you can satisfy your wants with a daily supply of food."

"Yes, father," said the son; "but if the boys weave their straw into knots and meshes, many a one may get hanged by them."

"Where have you seen that?" said the old bird.

"At court, among the stable-boys."

"Ah, my son, stable-boys are bad boys. If you have been at court with the fine lords, and yet have left behind you no feathers, you have learned carefully, and know how to behave yourself in the world; still, keep a sharp watch, for the wolves often eat the cleverest dogs."

"And where have you sought your living?" asked the old bird of his third young one.

"On the highways and byways I have followed the farm carts, and so, now and then, I have happened upon corn and barley seed."

"That is, indeed, a fine way of living," said the father; "but mind you observe the hedges, and see that no one bends down to pick up a stone; for, if so, it is time for you to start."

"That is true," said the young bird; "but what if one should carry little pebbles in his bosom or pockets, behind stone walls?"

"Where have you seen that?"

"With the miners, dear father," he replied; "for when they travel about they carry with them, secretly, stones, to throw at people."

"Oh, miners, working people—curious people

they! If you have been among them you have seen and learned a great deal."

At last the father comes to his youngest son, and said, "Ah! my dear cackler, you were always the weakest and most foolish; do you stop with me, the world has so many wicked and rough birds with sharp beaks and long claws, who attack and devour all the little birds; keep you with me, and let the worms and spiders on the trees and ground near us content you."

"Ah, my dear father, he who finds his own living without injury to others fares well, and no hawk, owl, eagle, or falcon, will harm him; for at all times, and every morning and evening, he asks God for his daily food—asks God, who is the maker and protector of all the birds in the woods and village copses,—who feeds the young ravens, and hears their cries, and without whose will no sparrow or creature falls to the ground."

"Where did you learn all this?" cried the old bird, astonished.

"When the breeze took me away," replied the bird, "I came to a church, where I spent the summer in eating the flies and spiders off the windows, and there I heard a sermon preached, and the Father of all little birds, who is in heaven, took care of me through the summer, and kept me from all harm from wicked and fierce birds."

"True, my dear son," said the old bird, "fly back to the church and keep the flies and spiders from the windows. And do not forget to cry to God like the ravens, and pray to Him every day,

and so you will keep well, in spite of all wicked birds, for he who gives himself up to God who hears all—he who prays, and is gentle and kind, and keeps true to his religion, and takes care to have always a clear conscience, will always be protected and provided for by God."

QUESTIONS.—How many children had the old sparrow? What happened to them? Was their father sorry? Why? When they met him again what did the first one say? What did the second, and the third and the fourth say?

ANT-SLAVES AND SLAVE-MASTERS.

Dr. H. B. Tristram.

A-ma-zon	**kid-nap-pers**	**ac-cus-tomed**
in-dus-tri-ous	**neigh-bour-hood**	**en-tranc-es**

IT had puzzled many people why it often happened that there were two kinds of ants—black ones and red ones—together, in the same ant-hill. Huber at length found that one kind, which he called the Amazon ant, did nothing but fight, and he found also that in the nests where there were two kinds there were never any male or female ants, but only workers of the black sort. For I should tell you that just as there are three kinds of bees,—the queen, who always stays at home, the drones or lazy gentlemen, and the workers, who are females that never lay eggs; so it is with the ants also, only that their ladies are not queens, and there are a great many of them in one nest.

Now the Amazon ants have pincers, which have no teeth of curved shape, like those of most other

ants, but are straight, and so are more like spears or swords than hoes and rakes, such as the other kinds have. Their business is fighting, and they want servants both to build their houses and take care of their children. Every evening, therefore, a little before sunset, they set out, like the kidnappers in Africa against a negro village, to surprise some industrious ant-hill in the neighbourhood, which their scouts have reported on. They surround the fortress, and then all rush upon it together. The few black ants that stand sentry at the entrances are soon mastered, and the robbers rush at once to the rooms where the eggs and young ones are, seize them and carry them off, never taking any males or females. They bring them home and hand them over to the slaves they already have of the same kind. These slaves have evidently got quite accustomed to their life, and fond of their masters, for they show great joy when prisoners are brought, and are very sad when the Amazons have failed. They run to meet them, and relieve them of their precious load,—take care of the young; shampoo them, undress them, take off their swaddling clothes at the proper time, and feed them. The red children of the Amazons and the black captives are brought up together and live like brothers. Not only do the slave-ants do all the work of the nursery; they build and repair the castle, and they are sent out after the cows,* and bring back the captives for their masters to milk. However, they always get their share. In fact they keep the key of the

* See the paper on Ants in "Third Reader."

pantry, for they open and shut all the doors of the castle and of the rooms in it every night and morning; and they will sometimes help the Amazons with whom they have lived, in fights against their own kind.

QUESTIONS.—Why are there two kinds of ants in one ant-hill? What colours are they? What name is given to the red ant? Are they male and female ants who live, two kinds, in an ant-hill? What weapons have the Amazons? How do they get their slaves? What do they carry off? What are the duties of the black ants? What do they do beside attending to the babies? What is their duty every night and morning?

Give different meanings of the following words:—pray, poll, pause, peace, peel, please, rain, raise, rode, row, roes, Rome, wrote, rest, wrap, read, ring, write, rye, rude, rough, rung.

SOME MURMUR.—*Archbishop Trench.*

Born 1807. Now Archbishop of Dublin. Author of "Poems," and learned books on "The Parables," "The Miracles," "The Study of Words," and "English, Past and Present."

SOME murmur, when their sky is clear,
And wholly bright to view,
If one small speck of dark appear
In their great heaven of blue;
And some with thankful love are filled.
If but one streak of light,
One ray of God's good mercy, gild
The darkness of their night.

In palaces are hearts that ask,
In discontent and pride,
Why life is such a dreary task,
And all good things denied?
And hearts in poorest huts admire
How love has in their aid
(Love that not ever seems to tire)
Such rich provision made.

AN OLD ENGLISH SONG.—*T. Heywood.*

(A.D. 1500—1565.)

Pack, clouds, away, and welcome day,
With night we banish sorrow;
Sweet air, blow soft—mount, lark, aloft,
To give my love good-morrow!
Wings from the wind to please her mind,
Notes from the lark I'll borrow;
Bird, prune thy wing—nightingale, sing,
To give my love good-morrow!
To give my love good-morrow
Notes from them both I'll borrow.

Wake from thy nest, Robin-redbreast,
Sing, birds, in every furrow;
And from each hill let music shrill
Give my fair love good-morrow!
Blackbird and thrush in every bush,
Stare, linnet, and cock-sparrow!
You pretty elves, amongst yourselves,
Sing my fair love good-morrow!
Sing, birds, in every furrow!

CAPTAIN WILLIAM HORNBY (A.D. 1744).

William Martin.

kid-napped	**em-ploy-ment**	**mer-chant-man**
par-don-a-ble	**dex-ter-ous**	**a-vail-a-ble**
nec-es-sary	**blun-der-buss**	**dis-en-gaged**
con-ster-na-tion	**im-me-di-ate-ly**	**ob-stin-ate-ly**

WILLIAM HORNBY was kidnapped at a very early age, and placed on board a man-of-war, to be a "powder-monkey;" that is, a boy who had to serve out the powder and shot on board a man-of-war when it was in action, running from gun to gun through the thickest of the fight. Poor little children of six and seven years old used to be taken by press-gangs from the streets for this work, and many poor little fellows no older might be seen in the old days of our wars, lying dead or dying on the deck, mangled by shot or shell, and yet bearing death like heroes, as they were. The first dawn of Hornby's life was in the battle-smoke, and his schooling was that of bursting bombs, double-headed shot, and boarding-pikes. He may be said to have taken well to this schooling, but noble conduct does not consist only in deeds of warfare, and Hornby was as generous as he was brave; for one of his little shipmates, a mere child of about his own age, being charged with an offence, William generously took all the blame upon himself, and let himself be flogged with the cat, rather than betray his friend. This was the first proof of his nobility of soul, but many others were given before the end of the war sent him ashore again. He soon "got a ship," as

sailors say when they get employment on board a vessel, and displayed such noble courage in rescuing the crew of a foundering brig, that, although then but a boy, he was soon made master of the vessel—of course a merchantman—and sailed in her from Great Yarmouth, in the year 1744. He steered for the coast of Holland, but when well over to the other side of the Channel, a French privateer, the *Braneas*, came upon his vessel, the *Isabella*. The strength of the two vessels was very unequal, for the *Isabella* mounted only four carriage guns, and two swivels, and her crew consisted of only five men and three boys, besides the boy-captain; while the French ship, commanded by Captain André, had ten carriage guns, and eight swivels, and seventy-five men, with three hundred small-arms.

It would have been a pardonable thing, against such odds, to have surrendered the ship and cargo. But Captain Hornby was not a man to do this; he felt that the honour of his country and the interests of his employers were concerned, and so, having stirred up his crew by some telling words, and obtained their promise of standing by him to the last, he bravely hoisted the British colours, his men giving three cheers, and with his two swivel guns returned the fire of his enemy's chase-guns. At last, after firing at each other in this way for some time, the Frenchman got close to the *Isabella*, and ordered Captain Hornby to strike. The brave English captain returned an answer of firm defiance, upon which the privateer, doubly shotting her guns, put her helm up, and poured such a shower of bullets

into the *Isabella*, that Hornby found it necessary to call his men into the hold, setting up some of their cargo on the deck round the mouth of it, so as to form a protection. Here he collected all his available fire-arms, and kept some of his men loading while the others kept firing at the enemy, who twice tried to board him, but were frustrated by the dexterous seamanship of Hornby in handling his vessel. The Frenchman now kept up an incessant fire upon the *Isabella*, both with guns and small-arms, and at two o'clock, when the action had lasted above an hour, the privateer, running furiously in upon the *Isabella*, entangled her bowsprit among the mainshrouds, and was lashed fast to her.

Captain André now bawled out in a menacing tone, "You English dog, strike!" Captain Hornby challenged him to come on board and strike his colours if he dared. The furious Frenchman instantly threw in twenty men on the *Isabella*, who began to hack and hew at the rude defences round the hold; but a general discharge of blunderbusses, with which the English were well provided, slew several of the assailants, and forced the others to a speedy retreat, and at the same time some of the English sailors leaped forward and compelled the privateer to sheer off. As soon as he found himself disengaged from the *Isabella*, Captain André turned round and made another attempt to board her from the other side, when the valiant Hornby and his mate shot each his man as the enemy were again lashing the ships together. The Frenchman once more commanded the Englishman to strike, but

the latter told him he never would strike, and that, rather than do so, he and his ship and men would all go to the bottom together, and that he meant to make him, the Frenchman, strike before he had done with him.

Mortified at this defiance, the French captain made a grand muster of his men, and having laid his ship alongside, about thirty of them rushed furiously on board the *Isabella*, and made a severe attack on the hold with hatchets and poleaxes, with which they had nearly cut their way through in three places, when the constant and well-directed fire kept up by Captain Hornby and his crew obliged them a second time to retreat, carrying their wounded with them, and hauling their dead after them with their boat-hooks.

The *Isabella* continuing still lashed to the enemy, the latter, with small-arms, fired repeated and terrible volleys into the hold; but the fire was returned with such spirit and effect, that the Frenchman repeatedly gave way. At length, Captain Hornby, seeing them crowding behind their mainmast for shelter, aimed a blunderbuss at them, which, being doubly loaded, and containing twelve balls in each barrel, threw him down in the firing, to the great consternation of his little crew, as they supposed him dead. Hornby, however, leaped up nimbly, told his men he was none the worse, although the blood was pouring from his temple. Loading another blunderbuss, and calling upon his men to follow him, he rushed towards the French vessel, and poured such a rain of bullets into her men

clustering on the deck as to oblige them to disengage themselves from the English ship, to which they had been lashed for more than an hour, in the vain hope of compelling her to surrender.

While the Frenchman was sheering off, Captain Hornby exultingly fired his two starboard guns into the enemy's stern, laughing at the same time, and telling the French captain it was his parting kick. This so enraged him that he immediately returned and renewed the conflict, which was carried on, yardarm to yardarm, for *nearly two hours*. The *Isabella* was shot through her hull several times, her sails and rigging were torn to pieces, her ensign was dismounted, and every yard and mast damaged; but this only made Hornby sustain the combat more obstinately. At last a well-aimed shot struck the French ship between wind and water, and obliged her to sheer off, and as the enemy was retiring, Hornby and his little crew sallied out from their fastness, and, erecting their fallen ensign, gave three cheers.

By this time both vessels had driven so near the English shore, that immense crowds had assembled to see the fight. The Frenchman, having stopped the leak, returned to the combat, and poured a dreadful volley into the stern of the *Isabella*, when Captain Hornby was wounded by a ball in the head, and bled profusely; but he tied a handkerchief round his head, and told his men that the blood had refreshed him, and given him strength, and made his head cool, and urged them to be at the Frenchman again. On this their spirits revived; and again,

taking post in their little citadel, they sustained three more tremendous broadsides, in returning which, they forced the French ship by a well-aimed shot a second time to sheer off. The huzzas of the *Isabella's* crew were renewed, and again the men set up their shattered ensign, which was shot through and through into honourable rags.

André, who was not deficient in bravery, returned to the fight, and, having disabled the *Isabella* by five terrible broadsides, once more summoned Hornby, with terrible menaces, to strike his colours, but Hornby turned to his gallant comrades, and pointing to the shore, said—"you see yonder, my lads, the witnesses of our fight?" This was enough—they one and all assured him that they would stand by him to the last, and finding them thus determined, he hurled his final defiance to the enemy.

André immediately ran his ship upon the *Isabella's* bow, and lashed it close alongside. But the men of the *Isabella* let fly at them, and stood at the gangway so menacingly, that his crew fell back wavering, and refused to attempt the dangerous task of again boarding. André was therefore obliged to cut the lashings that held the two ships together, and to sheer off. Captain Hornby resolved to salute the privateer with one parting gun; and this last shot, fired into the stern of the *Braneas*, happening to reach the magazine, it blew up with a tremendous explosion, and the vessel instantly went to the bottom. Out of seventy-five men, thirty-six men were killed or wounded in the action, and all the rest, together with the wounded, perished in the

deep, except three who were picked up by an English boat.

This horrible catastrophe excited the deepest sympathy in the breasts of the brave Hornby and his men, but their ship was so shattered that they could render no assistance to their ill-fated enemies.

Captain Hornby afterwards received from the king a large gold medal for his heroic conduct, which I don't think is surpassed by anything in the annals of any nation, and which affords us an example of courage, skill, endurance, and perseverance that may be well imitated in many of the struggles of life.

QUESTIONS.—What is a powder-monkey? What was Hornby's character? Give a proof of it. How many men and boys had his ship? How many had the *Braneas?* How did Hornby protect his men? Give a proof of his being a good sailor. What accident first befel Hornby? What did he do? How long were the two ships fighting side by side? When Hornby was wounded what did he tell his men? What did he say to them when he saw the crowds looking on? How did the fight end? What honour did Hornby get? What does his example teach us?

EXERCISE.—Give the different meanings of the following words: site, size, slight, style, silly, sent, sea, skull, some, sun, stake, straight, subtler, ton, slow, soul.

THE NOBLE NATURE.

Ben Jonson (1574—1637).

IT is not growing like a tree
In bulk doth make men better be;
Or standing long an oak three hundred year,
To fall a log at last, dry, bald, and sere;
A lily of a day
Is fairer far in May,
Although it fall and die that night;
It was the plant and flower of Light.
In small proportions we just beauties see;
And in short measures life may perfect be.

LESSONS ON SPECIFIC SUBJECTS.

CHEMISTRY.

1. ELEMENTARY AND COMPOUND MATTER.

1. Matter is divided into two kinds, *elementary* and *compound*, the former including all substances which consist of only one thing; the other, all those whose particles or atoms possess different properties—that is, are of different kinds. When a chemist takes a piece of marble and *analyses* it—that is, *separates* it into the different bodies of which it is made up—he finds that it consists of a bright yellow metal, called calcium; an invisible gas, called oxygen; and carbon, or charcoal. It is, therefore, a *compound* substance; that is, one made up of several things. But if he take a piece of iron, or gold, and try to analyse it, he can find nothing but iron or gold; there is nothing else in it; it is a *simple*, or elementary* body. It consists of just one thing; the most searching tests finding not the least particle of anything but iron in the one, or of anything in the other but gold.

2. Before modern chemistry discovered the way to analyse things, it was thought that there were four elements—fire, air, earth, and water—but not one of these is really an element; for chemistry has shown that fire is an effect, not a substance; and that air, earth, and water are not simple but compound bodies.

3. There are, altogether, about sixty-three elementary substances, by the combination of some or other of which, in different proportions, and under different conditions, all things in nature are formed. They consist of four gases—oxygen, hydrogen, nitrogen, and chlorine; one liquid, bromine; eight solid substances that are not metallic—iodine, fluorine, carbon, sulphur, phosphorus, arsenic, silicium, and boron, and include all the metals, which are fifty-one in number, of which twenty-three are more or less abundant, and twenty-eight are mostly very rare, and of very little or of no practical value.

4. A few examples of substances obtained by changes and combinations of others, and thus forming what are called *compound* substances, may be useful.

(1.) There is a substance called hy-dro-chlo-ric acid, which is of

* *Compound* is from *con* and *pono*, Latin, to put together. *Elementary* is from *elementum*, Latin, a *first principle*—that of which all things else are made, and into which they may be resolved.

great value in medicine and in chemical operations, and which, when mixed with another acid (nitric) forms what is called "*aqua regia*," or royal water, used for dissolving gold. This substance is obtained by putting together in a large flask equal weights of common salt and of sulphuric acid—that is, vitriol,—diluted with a third part of its weight of water. When this mixture is heated, a gas begins to rise from it freely, and this gas, after being purified by passing through a bottle with a little water in it, is carried by a glass tube into a bottle three-fourths full of water. By this water, 480 times its own bulk of the gas is absorbed, with the effect of increasing the volume of the water one-third, and a colourless liquid, which is hydrochloric acid, is the result. Now, how is this new substance produced? Let me tell you. *Common salt* is known to chemists as the *chloride of sodium*—that is, it is made up of a metal called *sodium*, and a gas called *chlorine*. *Water* is formed of eighty-nine parts of the gas called *oxygen*, to eleven of the gas called *hydrogen*. Now, when you mix the salt and the sulphuric acid diluted with water, the sulphuric acid, or vitriol, takes all the *sodium* of the salt to itself, and the *hydrogen* which is in the water joins itself to the *chlorine* in the salt, and makes hydrochloric gas, which, again, becomes hydrochloric acid when passed into water and absorbed by it, as we have seen. The water and the salt are, thus, decomposed—that is, separated into the separate elements of which they are formed, and they then exchange, each, one of its parts, and, by doing so, form a third substance wholly different from either. Hydrochloric acid is also formed by the action of sunlight, for if a mixture of equal volumes of hydrogen and chlorine gases be exposed to the sun, the two bodies unite with violence, and form hydrochloric acid.

(2.) Water is formed by the union of two gases, as has been said. This is seen if a current of galvanic electricity be passed through water which has a little acid in it, the poles of the battery being so arranged that plates of a metal called *platinum* pass into two tubes at each pole of the battery. It will be found that the tube over the one pole (the negative one) will be filled with gas, while that over the other pole (the positive) is half filled. On testing these gases, that in the full bottle is seen to be hydrogen, while that in the half-full bottle is pure oxygen; these two gases having been formed by the decomposition of the water. Nor is this all; by exploding carefully measured proportions of the two, water may be formed, thus showing that it consists of these two as its two component parts.

(3.) If a small quantity of what is called the "*red oxide of mercury*" be put into a glass tube and heated over a spirit-lamp, it will soon grow darker in colour, then lessen in bulk, and by-and-by disappear altogether, while, at the same time, a shining metallic brightness, like that of a mirror, is formed on the cooler parts of the tube. This, when touched with a glass rod, will run into globules of quicksilver, or mercury. If, now, a lighted match be put into the tube, it will burn more brightly than it did in the air, proving that some gas has been formed during the experiment, and this gas will be found to be oxygen. The weight of the mercury formed in the tube, and of the oxygen thus obtained, if tested, will be found exactly that of the oxide of mercury first put in; and thus it is clear that that substance was really a combination of the metal (mercury) and the gas (oxygen), which are two simple bodies or elements.

(4.) If you expose a piece of iron in clear dry air, it remains unchanged; but if the air be damp, or if you wet the iron, every one knows that it grows red and rusty. The reason of this is: the iron decomposes the water with which it thus comes in contact, and unites itself to the oxygen in it, becoming *rust*, so far as it does so. Rust is, thus, the oxide of iron, or a compound of oxygen and iron.

(5.) The means by which the chemist analyses bodies—that is, breaks them up into their parts, and finds out whether they are simple or compound—are, as these illustrations show, various. **Heat** is one of the most common, for nearly all substances of vegetable or animal origin may be shown to be compound by simply heating them. The case of the analysis of oxide of mercury, though it is a metallic substance, was an illustration of this. **Electricity** is another means, as we saw in the case of water. **Light**, also, and other influences, decompose many bodies; but the most powerful agency is what is called **Chemical Affinity**—that is, the property by which certain substances tend to unite with other substances when they come in contact, and thus to form new combinations. It is sometimes called **Chemical Attraction**, because it is a force which causes the particles of substances different from each other to meet in such a way as to form entirely new substances. As we have seen, the union of the metal sodium—which burns if it be put on the surface of water—with chlorine, a suffocating gas, makes common salt, a substance which is not the least like either sodium or chlorine gas. The burning of the metal sodium is another illustration of this law of chemical affinity or

attraction, which is of such endless use in helping us to find out the composition of bodies. Sodium has such an *affinity* for oxygen, that when a piece of it is put on the surface of water, it instantly catches fire, decomposing the water, and uniting so violently with the oxygen in it, as to cause combustion, while it leaves only hydrogen—thus showing of what water really consists.

These are the chief means used for chemical analysis, and all substances which show the presence of more than one thing—as, for instance, water, which consists of two things; sugar, which consists of three; or pure white of egg, which consist of six things—are called *compound;* while those which consist of only one thing are called *elements,* or *simple* bodies.

GREECE.—*Lord Byron.*

He who hath bent him o'er the dead,
Ere the first day of death is fled—
Before decay's effacing fingers
Have swept the lines where beauty lingers;
And marked the mild angelic air,
The rapture of repose that's there,
The fixed yet tender traits that streak
The languor of the placid cheek,
And—but for that sad shrouded eye,
That fires not—wins not—weeps not—now,
And but for that chill, changeless brow,
Where cold obstruction's apathy
Appals the gazing mourner's heart,
As if to him it could impart
The doom he dreads, yet dwells upon—
Yes, but for these, and these alone,
Some moments, ay, one treacherous hour,
He still might doubt the tyrant's power;
So fair, so calm, so softly sealed,
The first—last look—by death revealed!
Such is the aspect of this shore—
'Tis Greece—but living Greece no more!

NELLY GRAY.—*T. Hood.*

Ben Battle was a soldier bold,
And used to war's alarms;
But a cannon-ball took off his legs,
So he laid down his arms!

Now as they bore him off the field,
Said he, "Let others shoot,
For here I leave my second leg,
And the Forty-second Foot!"

Now Ben he loved a pretty maid,
Her name was Nelly Gray;
So he went to pay her his devoirs
When he devoured his pay!

But when he called on Nelly Gray,
She made him quite a scoff;
And when she saw his wooden legs,
Began to take them off!

"Oh, Nelly Gray! oh, Nelly Gray!
Is this your love so warm?
The love that loves a scarlet coat
Should be more uniform!"

Said she, "I loved a soldier once,
For he was blithe and brave;
But I will never have a man
With both legs in the grave!

"Before you had those timber toes,
Your love I did allow,
But then, you know, you stand upon
Another footing now!"

"Oh, Nelly Gray! oh, Nelly Gray!
For all your jeering speeches,
At duty's call I left my legs,
In Badajos's *breaches!*"

"Why then," said she, "you've lost the feet
Of legs in war's alarms,
And now you cannot wear your shoes
Upon your feats of arms!"

"Oh! false and fickle Nelly Gray!
I know why you refuse:—
Though I've no feet—some other man
Is standing in my shoes!

"I wish I ne'er had seen your face;
But, now, a long farewell!
For you will be my death;—alas!
You will not be my *Nell!*"

Now when he went from Nelly Gray,
His heart so heavy got—
And life was such a burden grown,
It made him take a knot!

So round his melancholy neck,
A rope he did entwine,
And, for his second time in life,
Enlisted in the Line!

One end he tied around a beam,
And then removed his pegs,
And, as his legs were off,—of course,
He soon was off his legs!

And there he hung, till he was dead
As any nail in town,—
For, though distress had cut him up,
It could not cut him down!

A dozen men sat on his corpse,
To find out why he died;—
And they buried Ben in four cross-roads,
With a *stake* in his inside!

QUESTIONS.—Give the different meanings of the following words and phrases in each verse:—"arms," "foot," "devoirs," "take them off," "uniform," "both legs in the grave," "footing," "breaches," "feet," "feats," "standing in my shoes," "*Nell*," "*Line*," off his legs," "cut him up," "stake."

DICTATION.—Use the first three verses.

ALFRED'S YOUTH.

Thomas Hughes, M.P. (Tom Brown).

Amongst the Anglo-Saxons the period between childhood and manhood was called "cnihthood," the word "cniht" signifying both a youth and a servant. The living connection between cnihthood and service was never more faithfully illustrated than by the young Saxon prince, though he had already lost the father to whom alone on earth his service was due. The young nobles of Wessex, of Alfred's time, for the most part learnt to run, leap, wrestle, and hunt, and were much given to horse-racing and the use of arms; but beyond this, we know from Alfred himself, that neither their fathers nor they had much care to go. Doubtless, however, here and there were clerical men, like Bishop Wilfrid in the previous century, to whom nobles sent their sons to be taught by him; and when full-grown, "to be dedicated to God if they should choose it, or, otherwise, to be presented to the king in full armour." It is not probable that Alfred ever had the advantage of such tuition, as he makes no mention of it himself. We do not know exactly how or when he learnt to read or write, but the story of how he met the young man's foes in the hey-day of his youth and strength comes to us in Bishop Asser's life, precisely enough, though in the language and clothing of a far-off time, with which we are little in sympathy. It seems better, however, to leave it as it stands. Any attempt to remove what we should call the miraculous element out of it would probably take away all life,

without rendering it the least more credible to readers of to-day.

As he advanced through the years of infancy and youth, his form appeared more comely than those of his brothers, and in look, speech, and manners he was more graceful than they. He was already the darling of the people, who felt that in wisdom and other qualities he surpassed all the royal race. Alfred, then, being a youth of this fair promise, while training himself diligently in all such learning as he had the means of acquiring, and especially in his own mother-tongue, and the poems and songs which formed the chief part of Anglo-Saxon literature, was not unmindful of the culture of his body, and was a zealous practiser of hunting in all its branches, and hunted with great perseverance and success. Skill and good fortune in this art, as in all others, the good Bishop here adds, are amongst the gifts of God, and are given to men of this stamp, as we ourselves have often witnessed.

But before all these things he was wishful to strengthen his mind in the keeping of God's commandments; and, finding that the carnal desires and proud and rebellious thoughts which the devil, who is ever jealous of the good, is apt to breed in the minds of the young, were likely to have the mastery of him, he used often to rise at cock-crow in the early morning, and repairing to some church, or holy place, there cast himself before God in prayer that he might do nothing contrary to his Holy will. But finding himself still hard bested, he began at such times to pray, as he lay prostrate before the

altar, that God in His great mercy would strengthen his mind and will by some sickness, such as would be of use to him in the subduing of his body, but would not show itself outwardly or render him powerless or contemptible in worldly duties, or less able to benefit his people. For King Alfred from his earliest years held in great dread leprosy, and blindness, and every disease which would make a man useless or contemptible in the conduct of affairs. And when he had often and with much fervour prayed to this effect, it pleased God to afflict him with a very painful disease, which lay upon him with little respite until he was in his twentieth year.

THE THRUSH'S NEST.—*J. Clare* (1793—1864)

Within a thick and spreading hawthorn bush,
That overhung a mole-hill large and round,
I heard from morn to morn a merry thrush
Sing hymns of rapture, while I drank the sound
With joy; and oft, an unintruding guest,
I watched her secret toils from day to day,
How true she warp'd the moss to form her nest,
And modell'd it within with wool and clay.
And by-and-by, like heath-bells gilt with dew,
There lay her shining eggs as bright as flowers,
Ink-spotted over, shells of green and blue;
And there I witnessed, in the summer hours,
A brood of nature's minstrels chirp and fly,
Glad as the sunshine and the laughing sky.

THE PRAIRIE DOG.—*Major Bell.*

Ro-dents	**o-rig-i-nal**	**e-nor-mous**
neigh-bour-hood	**im-mè-di-ate-ly**	**ac-com-plished**
in-dig-nā-tion	**sub-ter-ran-e-an**	**con-nec-tions**

WHAT most delights all travellers on the plains at first are the prairie dogs. These little rodents are the size of a rabbit, the colour of a hare, have the hair of a rat, and the face of a squirrel; but their tails are original, they stand up straight over their back, and do a most enormous amount of wagging. They are the most sociable little fellows in the world; by nature they live in colonies, called by the ranchmen "prairie-dog towns," where they often cover many acres of land with their little mounds. Each mound has a hole in the top, leading to the family apartments. They appear to take a

most lively interest in the "advance of empire," for wherever there is a road, there they congregate in unusual numbers. In the centre of the main street at Salina three of these little fellows had established themselves; they seemed to enjoy the bustle of that place, and were the great delight of the children, who used to feed them with nuts and crackers, and get them to sit upon their haunches and eat with their claws. To frighten or kill one would have brought down the just indignation of the whole neighbourhood. As our line of waggons moved along the road and approached a "dog town," the little fellows who were above ground, cropping the grass and playing about, would immediately rush each to his "look-out station" on the top of his mound, while lots of little heads would suddenly appear as those from below came up to see the fun, and join in the chorus of sharp barks with which they were wont to greet intruders. They would shake their sides with barking, and at every bark the tails would wag until, worked up to a climax of fear and delight, they would rush into the earth with a volley of half-uttered barks, and a last defiant wag of the little tail. No sooner had we passed than they would appear again, and keep up a chorus of adieus until we were out of hearing. Their flesh is good to eat, being very much like squirrel or chicken; but they are too sharp to be caught away from the top of their mounds, and if shot in this position they always fall into their holes, and die out of reach. The only way to get them is to drown them out by pouring water into their holes, but if the subter-

ranean connections are extensive, or the soil very porous, this cannot be accomplished.

QUESTIONS.—Of what class of animals is the prairie dog? What is it like? Do they live apart, or how? On what do children feed them? When the waggons passed, what did the prairie dogs do? How only can they be got out of their holes? In what part of the world are the Prairies?

THE WOLF IN SHEEP'S CLOTHING.

A WOLF once thought he would put on the skin which he had stripped from a poor sheep, and pass himself off for a sheep, that he might the more easily get among the flocks for his own ends. The silly sheep were quite cheated by this trick, and many of them were killed and eaten; but at last the shepherds spied the trick, and having caught the wolf, at once put a rope round his neck and hanged

him on the next tree. "What are you doing?" said one of the sheep; "hanging a sheep!" "Silly thing," replied the shepherd, "we never hang a sheep, but we will always hang a wolf though he has put on a sheep's skin, for he deserves it all the more for his hypocrisy."

QUESTIONS.—What did the wolf do, and for what end? What did the sheep think? What did they do with him? What reason did they give for hanging him? What is hypocrisy?

DICTATION.—Use the fable as it stands.

THE SOWER'S SONG.—*Carlyle* (*b.* 1795).

Now hands to seed-sheet, boys,
We step and we cast; old Time's on wing;
And would ye partake of Harvest's joys,
The corn must be sown in Spring.
Fall gently and still, good corn,
Lie warm in thy earthy bed;
And stand so yellow some morn,
For beast and man must be fed.

Old Earth is a pleasure to see
In sunshiny cloak of red and green;
The furrow lies fresh; this Year will be
As Years that are past have been.
Fall gently and still, &c.

Old Mother, receive this corn,
The son of Six Thousand golden sires;
All these on thy kindly breast were born,
One more thy poor child requires.
Fall gently and still, &c.

Now steady and sure again,
And measure of stroke and step we keep;
Thus up and thus down we cast our grain:
Sow well, and you gladly reap.
Fall gently and still, good corn,
Lie warm in thy earthy bed;
And stand so yellow some morn,
For beast and man must be fed.

QUESTIONS.—What is needed if we would have corn in harvest? Who are the "six thousand golden sires"? What is the "measure of stroke and step" needed for?

DICTATION.—Use the first double verse.

As an exercise in composition, try to express the same thoughts in prose, with as many changes of words as possible.

THE BATTLE OF HASTINGS.—*Charles Dickens.*

(A.D. 1066.)

am-bas-sa-dors	**con-se-cra-ted**	**reg-ul-ar-ly**
Nor-we-gi-an	**North-um-ber-land**	**hon-our-a-ble**
in-tel-li-gence	**re-con-cil-i-a-tion**	**rep-re-sent-ing**
vic-tor-i-ous	**car-ous-ing**	**spec-ta-cle**

HAROLD was crowned King of England on the very day of Edward the Confessor's funeral. When the news reached Norman William, hunting in his park

at Rouen, he dropped his bow, returned to his palace, called his nobles to council, and presently sent ambassadors to Harold, calling on him to keep his oath, and resign the crown. Harold would do no such thing. The barons of France leagued together round Duke William for the invasion of England. Duke William promised freely to distribute English wealth and English lands among them. The Pope sent to Normandy a consecrated banner, and a ring containing a hair which he warranted to have grown on the head of St. Peter! He blessed the enterprise, and cursed Harold, and requested that the Normans would pay "Peter's pence"—or a tax to himself of a penny a year on every house—a little more regularly in future, if they could make it convenient.

King Harold had a rebel brother in Flanders, who was a vassal of Harold Hardrada, King of Norway. This brother and the Norwegian king, joining their forces against England, with Duke William's help won a fight, in which the English were commanded by two nobles, and then besieged York. Harold, who was waiting for the Normans on the coast of Hastings, with his army, marched to Stamford Bridge, upon the river Derwent, to give his brother and the Norwegians instant battle.

He found them drawn up in a hollow circle, marked out by their shining spears. Riding round this circle at a distance, to survey it, he saw a brave figure on horseback, in a blue mantle and a bright helmet, whose horse suddenly stumbled and threw him.

"Who is that man who has fallen?" Harold asked of one of his captains.

"The King of Norway," he replied.

"He is a tall and stately king," said Harold, "but his end is near."

He added, in a little while—"Go yonder to my brother, and tell him if he withdraw his troops he shall be Earl of Northumberland, and rich and powerful in England."

The captain rode away and gave the message.

"What will he give to my friend the King of Norway?" asked the brother.

"Seven feet of earth for a grave," replied the captain.

"No more?" replied the brother, with a smile.

"The King of Norway being a tall man, perhaps a little more," replied the captain.

"Ride back," said the brother, "and tell King Harold to make ready for the fight!"

He did so very soon. And such a fight King Harold led against that force, that his brother, the Norwegian king, and every chief of note in all their host, except the Norwegian king's son, Olave, to whom he gave honourable dismissal, were left dead upon the field. The victorious army marched to York. As King Harold sat there at the feast, in the midst of all his company, a stir was heard at the doors, and messengers, all covered with mire from riding far and fast through broken ground, came hurrying in to report that the Normans had landed in England.

The intelligence was true. They had been

tossed about by contrary winds, and some of their ships had been wrecked. A part of their own shore, to which they had been driven back, was strewn with Norman bodies. But they had once more made sail, led by the Duke's own galley, a present from his wife, upon the prow whereof the figure of a golden boy stood pointing towards England. By day, the banner of the three lions of Normandy, the diverse coloured sails, the gilded vanes, the many decorations of this gorgeous ship, had glittered in the sun and sunny water; by night, a light had sparkled like a star at her mast head: and now, encamped near Hastings, with their leader lying in the old Roman castle of Pevensey, the English retiring in all directions, the land for miles around scorched and smoking, fired and pillaged, was the whole Norman power, hopeful and strong, on English ground.

Harold broke up the feast, and hurried to London. Within a week his army was ready. He sent out spies to ascertain the Norman strength. William took them, caused them to be led through his whole camp, and then dismissed. "The Normans," said these spies to Harold, "are not bearded on the upper lip as we English are, but are shorn. They are priests." "My men," replied Harold, with a laugh, "will find those priests good soldiers."

"The Saxons," reported Duke William's outposts of Norman soldiers, who were instructed to retire as King Harold's army advanced, "rush on us through their pillaged country with the fury of madmen."

"Let them come, and come soon," said Duke William.

Some proposals for a reconciliation were made, but were soon abandoned. In the middle of the month of October, in the year 1066, the Normans and the English came front to front. All night the armies lay encamped before each other, in a part of the country then called Senlac, now called (in remembrance of them) Battle. With the first dawn of day they arose. There, in the faint light, were the English on a hill; a wood behind them; in their midst the royal banner, representing a fighting warrior, woven in gold thread adorned with precious stones; beneath the banner, as it rustled in the wind, stood King Harold on foot, with two of his remaining brothers by his side; around them, still and silent as the dead, clustered the whole English army—every soldier covered by his shield, and bearing in his hand his dreaded English battle-axe.

On an opposite hill, in three lines—archers, foot-soldiers, horsemen—was the Norman force. Of a sudden, a great battle-cry burst from the Norman lines. The English answered with their own battle-cry. The Normans then came sweeping down the hill to attack the English.

* There was one tall Norman knight who rode before the Norman army on a prancing horse, throwing up his heavy sword and catching it, and singing of the bravery of his countrymen. An English knight who rode out from the English force to meet him, fell by this knight's hand. Another English knight rode out, and he fell too.

But then a third rode out, and killed the Norman. This was in the beginning of the fight. It soon raged everywhere.

The English, keeping side by side in a great mass, cared no more for the showers of Norman arrows than if they had been showers of Norman rain. When the Norman horsemen rode against them, with their battle-axes they cut men and horses down. The Normans gave way. The English pressed forward. A cry went forth among the Norman troops that Duke William was killed. Duke William took off his helmet, in order that his face might be distinctly seen, and rode along the line before his men. This gave them courage. As they turned again to face the English, some of the Norman horse divided the pursuing body of the English from the rest, and thus all the foremost portion of the English fell, fighting bravely. The main body still remaining firm, heedless of the Norman arrows, and with their battle-axes cutting down the crowds of horsemen when they rode up, like forests of young trees, Duke William pretended to retreat. The eager English followed. The Norman army closed again, and fell upon them with great slaughter.

"Still," said Duke William, "there are thousands of the English, firm as rocks around their king. Shoot upward, Norman archers, that your arrows may fall down upon their faces."

The sun rose high, and sank, and the battle still raged. Through all that wild October day the clash and din resounded in the air. In the red

sunset, and in the white moonlight, heaps upon heaps of dead men lay strewn, a dreadful spectacle, all over the ground. King Harold, wounded with an arrow in the eye, was nearly blind. His brothers were already killed. Twenty Norman knights, whose battered armour had flashed fiery and golden in the sunshine all day long, and now looked silvery in the moonlight, dashed forward to seize the royal banner, from the English knights and soldiers, still faithfully collected round their blinded king. The king received a mortal wound, and dropped. The English broke and fled. The Normans rallied and the day was lost.

Oh! what a sight beneath the moon and stars, when lights were shining in the tent of the victorious Duke William, which was pitched near the spot where Harold fell—and he and his knights were carousing within—and soldiers with torches going slowly to and fro without, sought for the corpse of Harold among piles of dead—and the warrior, worked in golden thread and precious stones, lay low, all torn and soiled with blood—and the three Norman lions kept watch over the field!

QUESTIONS.—What king reigned before Harold's being crowned? Who besides claimed the crown? What did William promise his followers? What part did the Pope take in these invasions of England? What passed between Harold and the King of Norway? Who won the battle? When was the battle of Hastings fought? Where did William land? Who won? What came of Harold?

Give, spell, and explain words like the following in sound, but different in meaning:—sore, sell, sale, salter, satire, seal, seed, seem, seer, sees, sheer, sweet, tare, their, throw, throne, toe, tear, teas, teem, threw, tale, tray, tacks, use (*verb*), vale, vain, ware, weather, wield, week, wale, wane, waste, wave, won, yoke.

DATES.—Exodus, B.C. 1491. David and Homer about B.C. 1000. Rome founded, B.C. 753; Isaiah, the prophet, then living. Cyrus, who sends back the Jews from captivity, B.C. 555. Consuls begin and kings end at Rome, B.C. 509. Marathon fought, B.C. 490.

Herodotus, B.C. 444; Nehemiah then busy rebuilding Jerusalem. Alexander the Great, B.C. 333. Hannibal, B.C. 222. Julius Cæsar, born B.C. 100; Cicero then 7 years old; Pompey, 6; Sylla, 38; Marius, about 50.

Cæsar invades Britain, B.C. 51. Cæsar murdered, B.C. 44. Cicero murdered the year after. Pompey murdered, B.C. 48, after the battle of Pharsalia. Augustus is the first Roman Emperor, B.C. 30.

Give as many different meanings of the following words as you can:—address, air, angle, arch, ashes, bait, ball, bank, bar, bark, base, baste, bat, bay, beam, bear, bed, beetle, bill, billet, bit, blade, blow, board, boot, bound, bowl, box, brace, brook, bull, butt, calf, can, cape, caper, card, cast, cataract, charge, chase, cleave, club, cockle, comb, corn, count.

THE BLACK COCKTAIL BEETLE.

Rev. J. G. Wood, M.A.

re-pul-sive **su-per-sti-tious** **pre-da-ceous**
vo-ra-cious **in-va-ri-a-bly** **ex-ceed-ing-ly**
mis-chiev-ous **em-an-a-tions**

Now comes an insect that is very familiar to us, the Black Cocktail, as it is popularly and fancifully called. I really think this is the very ugliest insect in England. It is scarcely so repulsive as the cockroach, its wonderful courage and spirit being redeeming points; but it is very hideous. Its colour is dull, dead black; its eyes, which scarcely project from the head, have a cold, cruel look about them; and its tail, when raised menacingly like that of a scorpion, protrudes two yellow vesicles at the tip, from which emanates a horrible odour. Sometimes it finds its way into cellars and larders if they be

wholly or partially under ground, and then the servants are always much alarmed at the creature, of which they have a dread, which is superstitious rather than the offspring of mere prejudice or ignorance. As its appearance suggests, it is one of the predaceous beetles, and is as fierce and brave as it is voracious. It really seems not to know what fear is, and no enemy seems to frighten it. I once came across one of these beetles at the foot of the old Clifton Baths stairs at Margate, and threatened it with the point of my stick. The beetle at once dashed at the stick and fought most valiantly. Of course I did not wish to hurt the insect, so I merely continued the feigned attack, the beetle retreating with its face to the foe and its jaws wide open, until it had fairly surmounted the whole flight of stairs, invariably turning round as it reached the top of each stair, and making a fresh dash at the stick. It was exceedingly angry, but did not show the least symptom of fear, though I repeatedly struck violently within a few inches of its head. I was so pleased with the dauntless courage of the beetle, that, when it reached the top, I put it into a deep chalk crevice of the cliff, where it would be safe from the mischievous boys who infest the place.

This is one of the most active of beetles. Being furnished, like all its family, with long and ample wings, and not being burdened, like the chafers, with a thick and heavy body, it flies with great rapidity, and can pass over incredible distances without being obliged to rest. It is equally active on the ground, for which reason the generic name of

Ocypus, or "swift-footed," has been given to it. The specific title *olens*, or "stinking," is given to it in consequence of the horrible emanations from the tail tubercles.

QUESTIONS.—What is the name of this beetle? What are its good points? Describe its appearance. To what class of beetles does it belong? Is it afraid? Can it fly? Why does it get the name of swift-footed? Has it a sweet smell?

Give as many meanings in which the following words are used as you can:—crab, craft, crane, cricket, crop, cross, crow, cry, dam, date, deck, die, diet, divers, dock, down, draw.

THE PIED PIPER OF HAMELIN.

Robert Browning.

com-ment-a-ry man-u-script shriek-ing
en-rap-tured mu-sic-ians scat-ter-ing
chat-ter-ing clat-ter-ing

HAMELIN Town's in Brunswick,
By famous Hanover city;
The river Weser, deep and wide,
Washes its wall on the southern side;
A pleasanter spot you never spied;
But, when begins my ditty,
Almost five hundred years ago,
To see the townsfolk suffer so
From vermin was a pity.

Rats!
They fought the dogs, and killed the cats,
And bit the babies in the cradles,
And ate the cheeses out of the vats,
And licked the soup from the cook's own ladles,
Split open the kegs of salted sprats,
Made nests inside men's Sunday hats,
And even spoiled the women's chats,
By drowning their speaking
With shrieking and squeaking
In fifty different sharps and flats.

* * *

Into the street the Piper stept,
Smiling first a little smile,
As if he knew what magic slept
In his quiet pipe the while;
Then, like a musical adept,
To blow the pipe his lips he wrinkled,
And green and blue his sharp eyes twinkled
Like a candle flame where salt is sprinkled;
And ere three shrill notes the pipe uttered,
You heard as if an army muttered;
And the muttering grew to a grumbling;
And the grumbling grew to a mighty rumbling;
And out of the house the rats came tumbling.
Great rats, small rats, lean rats, brawny rats,
Brown rats, black rats, gray rats, tawny rats,
Grave old plodders, gay young friskers,
Fathers, mothers, uncles, cousins,
Cocking tails and pricking whiskers,
Families by tens and dozens,
Brothers, sisters, husbands, wives—
Followed the Piper for their lives.
From street to street he piped advancing,
And step for step they followed dancing,
Until they came to the river Weser,
Wherein all plunged and perished!
—Save one who, stout as Julius Cæsar,
Swam across and lived to carry
(As he, the manuscript he cherished)
To Rat-land home his commentary:
Which was, "At the first shrill notes of the pipe,
I heard a sound as of scraping tripe,
And putting apples, wondrous ripe,
Into a cider-press's gripe;
And a moving away of pickle-tub-boards,
And a leaving ajar of conserve-cupboards,
And a drawing the corks of train-oil flasks,
And a breaking the hoops of butter-casks;
And it seemed as if a voice
(Sweeter far than by harp or by psaltery
Is breathed) called out, Oh! rats, rejoice!
The world is grown to one vast drysaltery!

To much on, crunch on, take your nuncheon,
Breakfast, supper, dinner, luncheon!
And just as a bulky sugar puncheon,
All ready staved, like a great sun shone
Glorious scarce an inch before me,
Just as methought it said, Come, bore me!
—I found the Weser rolling o'er me!"

* * * * *

Once more he stept into the street,
And to his lips again
Laid his long pipe of smooth straight cane;
And here he blew three notes (such sweet
Soft notes as yet musicians cunning
Never gave the enraptured air)—
There was a rustling that seemed like a bustling
Of merry clouds justling at pitching and hustling.
Small feet were pattering, wooden shoes clattering,
Little hands clapping and little tongues chattering.
And, like fowls in a farm-yard when barley is scattering,
Out came the children running,
All the little boys and girls,
With rosy cheeks and flaxen curls,
And sparkling eyes and teeth like pearls,
Tripping and skipping, ran merrily after
The wonderful music with shouting and laughter.

* * * * *

As the Piper turned from the High Street
To where the Weser rolled its waters
Right in the way of their sons and daughters!
However he turned from South to West,
And to Koppelberg Hill his steps addressed,
And after him the children pressed;
Great was the joy in every breast.
"He never can cross that mighty top!
He's forced to let the piping drop,
And we shall see our children stop!"
When, lo, as they reached the mountain-side,
A wondrous portal opened wide,
As if a cavern was suddenly hollowed;
And the Piper advanced and the children followed,
And when all were in to the very last,
The door in the mountain-side shut fast.

LESSONS ON SPECIFIC SUBJECTS.

BOTANY.*

By Professor Asa Gray, of Harvard University.

1. The **Root** (Fig. 4, *a*), of a plant, is the part which grows downwards into the ground, and takes in nourishment for the plant from the soil. It commonly branches again and again as it grows, and these smaller branches or fibres are named *Rootlets*. Real roots never bear leaves, nor anything besides root branches or rootlets.

2. The **Stem** (Fig. 4, *b*), is the part that grows upwards, and bears the leaves and blossoms. At certain fixed places the stem bears a leaf, or a pair of leaves.

3. **Leaves** (Fig. 4. *c*), are, generally, flat and thin green bodies, turning one side to the sky, and the other to the ground. They make the *Foliage*.

Fig. 4.—The Royal Fern.

4. The **Plant** in its **growth**. A plant has a body or trunk consisting of two parts, an upper and a lower. The lower is the **Root**, which fixes the plant to the soil. The upper is the **Stem**, which rises out of the ground, and bears leaves which are hung out from it, in the light and air. The root takes in a part of the food of the plant from the soil, and this the stem bears to the leaves, which, themselves, take in another part of its food, from the air. In the leaves, moreover, what the roots absorb and drink in, from the ground, and what they themselves absorb from the air, is exposed to the sunshine and *digested;* that is, changed into what is needed to nourish the plant. This is necessary because there is no nourishment in earth, air and water as they are, nor till the plant makes them into nourishment, which it has the power of doing. By this food, or nourishment, thus obtained, the plant is able to grow, that is, it stretches out its roots farther into the soil, and sends out more branches from them, thus getting a better hold

* From Greek *botanē*, an herb, plant: the science of plants.

of the ground, and spreading more widely, so as to be able to absorb the more from it, while, above, the stem lengthens and adds leaf after leaf, or shoots out branches on which still more leaves are spread out in the light and air.

5. Every herb, or shrub, or tree, is built up in this way, for the smallest herb just sprouted from the seed, and the largest tree of the forest consist alike of root, stem, and leaves, and of nothing else; only the tree has larger and more branching stems and roots, and has leaves by thousands.

6. After having attended in this way to its nourishment and growth, for some time, the plant sets about **reproducing** itself by seed. For this purpose it *blossoms*; in many cases within a few weeks after springing from the seed. Thus, all our *annuals*,* such as larkspur, lupins, &c., blossom in the course of the summer. *Biennials*,† such as the carrot, parsnip, mullen, and the common thistle, do not flower before the second summer; and shrubs and trees, and some herbs, do not begin to do so till they are several years old.

7. The *flower* blossoms in order that it may form the *fruit;* the *seed* is the chief or essential part of the fruit, and the chief or essential part of the seed is the *germ*‡ or *embryo*§ it contains, which is itself a plant, but very very small, inside the seed, ready to grow into a new plant when the seed is sown.

THE PARTS OF A FLOWER.

1. A flower, perfect in all its parts, consists of a *Calyx*, *Corolla*, *Stamens*, and *Pistils*. One from the Convolvulus or Bindweed, common in our fields and gardens, will serve for an example.

Figs. 5 and 6.

Here is a flower of the *common Convolvulus*, with the *corolla* (Fig. 5), separated from the *calyx* (Fig. 6.) These are the *leaves of the flower*, and cover in the bud, protecting the *stamens* and *pistils*, which are the *essential organs* of the flower, because they are both necessary for the forming of the seed. Now let us take each of these parts and examine it separately.

2. The **Calyx**, a latin name for "flower-cup," is the cup or

* From Latin *annus*, a year.

† From Latin *biennialis*, from *bis*, twice, and *annus*, a year: here, a plant that lasts two years.

‡ Germ, from Latin *gero*, to bear, to produce.

§ Greek *embryon*, the living germ which swells and grows.

outer covering of the blossoms (Fig. 6). It is generally green and leaf-like.

3. The **Corolla** is the inner cup, or inner set of leaves, of the flower, and rises out of the *Calyx*. It is very seldom green, as the calyx commonly is, but is coloured, and thus is the most showy part of the blossom. Fig. 5 shows the corolla of the Convolvulus whole. Fig. 7 is the same, split and spread open, to show

Fig. 7.

4. The **Stamens**. These, in this flower, grow fast to the bottom of the corolla. Each stamen consists of two parts, a *filament* and an *anther*, and there are five of them in the Convolvulus. The *filament** is the stalk, the *anther*† is a little case, or hollow body, borne on the top of the *filament*. It is filled with a powdery matter, called *pollen*.‡ Fig. 9 shows a separate stamen on a larger scale; *f* is the *filament*; *a*, the *anther* out of which *pollen* is falling from a slit or long opening down each side.

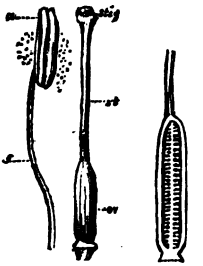
Fig. 8.

5. The **Pistils** § are the bodies in which the seeds are seen. They are found in the centre of the flower. The Convolvulus has only one *pistil*, which is shown, enlarged, in Fig. 8. The Rose and the Buttercup have a great many. A *pistil* has three parts. At the bottom of it is the *Ovary*‖, which becomes the seed-vessel. This is prolonged upwards into a slender body, called the *style*,¶ and this bears a moist, and generally somewhat enlarged portion, with a naked roughish surface—not having any skin like the rest—called the *stigma*. Upon this *stigma* some of the pollen or powder from the *anthers* falls and sticks fast, and this, somehow, enables the *pistils* to ripen seeds that will grow.

6. Let us now look at a *stamen* and a *pistil* from one of the flowers of a Lily, where all the parts are on a larger scale. Here is a *stamen* (Fig. 9) with its stalk or *filament*, *f*, and its *anther*, *a*, discharging its yellow dust or *pollen*. By its side is the *pistil*, (Fig. 10) with its *ovary*, *ov*, which tapers into a *style*, *st*, with a *stigma*, *stig*, on the top of it. Now, cut the *ovary* through, and it will be found to contain young seeds. Fig. 11 shows the *ovary* of Fig. 10

* Latin *filum*, a thread.
† Greek *anthēros*, flowery, blooming, from *anthos*, to blossom.
‡ In Latin this word means fine-sifted flour.
§ Latin *pistillum*, a pestle, from their likeness to pestles.
‖ Latin *ovum*, an egg.
¶ Latin *stylus*, the metal point with which the ancients wrote on their wax tablets.

cut through, lengthwise, and magnified by a common hand magnifying-glass. Fig. 12 is the lower part of another one, cut in two, crosswise. The young seeds, or more correctly, the bodies which are to become seeds, are named *ovules*. In the Lily these are very numerous; in the Convolvulus there are only six.



Figs. 9 and 10. Fig. 11.

Fig. 12.

7. These are all the parts any flower has, but many flowers have not all these parts. Some have only one flower-cup, or one set of blossom-leaves. Lilies appear to have only one set. Some have neither *calyx* nor *corolla*, some *stamens* have no *filament*, and some *pistils* have no *style*, for the *style* and the *filament* are not necessary parts, as the *anther* and the *ovary* and the *stigma* are. The *calyx* and the *corolla*, one or both, often consist of separate leaves, as in the true Lilies. Each separate piece or leaf of a *corolla* is called a *petal*; and each leaf or piece of a *calyx* is called a *sépal*.

8. The *corolla*, the *stamens*, and, generally, the *calyx*, fall off and wither away after blossoming, while the *ovary* of the pistil remains, grows larger, and becomes the **Fruit**. Thus the **Fruit** is the ripened *ovary*. It may be a berry, a stone fruit, a nut, a grain, or a pod. The fruit of the Lily and also of the Convolvulus is a pod. Here is the pod or fruit of the Convolvulus (Fig. 13) with the *calyx* remaining beneath, and the remains of the bottom of the *style* resting on its summit. Fig. 14 shows the same pod fully ripe and dry, and splitting into three pieces that the seeds may fall out. This pod has three cavities in it,—called *cells*—and in each *cell* two pretty large seeds. Lily-pods have three *cells*, as we may see in the *ovary* of the flower (Fig. 12), and many seeds in each.

Fig. 13.

Fig. 14.

9. Seeds are the bodies produced by the ripened pistil, from which new plants may spring. Here (Fig 15) is a seed of the Convolvulus a little enlarged, and also two seeds (Fig. 16, 17) cut through, lengthwise, in two different directions, and enlarged by a magnifying-glass, to show the inside of them.

10. The part of the seed that grows is the Embryo or Germ, which is a little plantlet ready formed in the seed. In the Convolvulus it is pretty large, and may readily be got out whole from a fresh seed,—or from a dried one, after soaking it well in hot water. In Fig. 16 it is shown whole, flatwise, in the seed, where it is a good deal crumpled up, to save room. In Fig. 17 merely the *thickness* of the *embryo* is seen, edgewise, in the seed, surrounded by the pulpy matter which is intended to nourish it when it begins to grow. In Fig. 18 the *embryo* is shown taken out whole, and spread out flat. In Fig. 19 its two little leaves are separated, and we plainly see of what it consists. It is a pair of tiny leaves, on the summit of a little stem. The leaves (Fig. 19 *c c*) are named *seed-leaves*, or *cotyledons*; the little stem or *stemlet*, is called the *radicle*, *r*.

Fig. 15.

Fig. 16.

Fig. 17.

Fig. 18.

Fig. 19.

WILD FLOWERS—*Robert Nicoll* (1814—1837.)

BEAUTIFUL children of the woods and fields!
That bloom by mountain streamlets 'mid the heather,
Or into clusters 'neath the hazels gather—
Or where by hoary rocks you make your bields,
And sweetly flourish on through summer weather—
I love ye all!

Beautiful things ye are, where'er ye grow!
The wild red-rose—the speedwell's peeping eyes—
Our own blue-bell—the daisy that doth rise
Wherever sunbeams fall or winds may blow;
And thousands more, of blessed forms and dyes,
I love ye all!

Beautiful nurslings of the early dew,
Fanned in your loveliness by every breeze,
And shaded o'er by green and arching trees;
I often wished that I were one of you,
Dwelling afar upon the grassy leas—
I love ye all!

ABRAHAM'S CHILDHOOD.—*Herder.*

A JEWISH TRADITION.

as-ton-ished coun-ten-ance yes-ter-day
o-ver-throw A-bra-ham un-dis-mayed
quenched child-ren

ABRAHAM was brought up in a cave, for the tyrant Nimrod thirsted for his life. But even in this dark home the light of God was in him. He thought much about his Creator, and asked himself the question, Who could be He?

When he was sixteen years old he went out, and when he, for the first time, saw heaven and earth, he was astonished and rejoiced beyond measure, and asked all things round him, "Who is your Creator?"

The sun rose, and Abraham fell down on his face. "This," said he, "is the Creator, for his countenance is glorious."

The sun climbed up the sky, and then descended and set at evening. Then the moon rose, and Abraham said to himself—"The light that has gone down was not the God of heaven, perhaps this lesser light, which the army of stars obey, is He." But both moon and stars went down, and Abraham stood alone.

He went to his father and asked him—"Who is the God of heaven and earth?" and Terah showed him his idols. "I will prove them," said Abraham to himself, and when he was alone he laid the most enticing fruits before them. "If ye be living gods,"

said he, "accept the offering made you." But the idols stood there and did not move.

"Can my father count these for gods?" said the boy. "Well, perhaps I will teach him better." So he took a stick and broke all the idols in pieces but one, then put the stick in that one's hand and ran to his father—"Father," said he, "has your chief god broken all the others?"

But Terah looked fiercely at him and answered—"You are mocking me, boy; how could it do so, when I made it with my own hands?"

"Oh, be not angry, my father," said Abraham, "and let thine ear hear what my mouth speaketh! If you cannot believe that your god could do what I have done with my boy hand, how can he be the god who created me and thee, and the heavens and the earth?" Terah was silent before the lad's words.

But the news of the deed soon came to the tyrant Nimrod, and he called Abraham before him and said—"My god shalt thou worship, O boy, or the burning furnace shall be thy reward." For all the wise men had foretold to the King, at Abraham's birth, that he would overthrow the idols, and would put an end to the worship ordered by the king in his kingdom.

"Who is thy god, O King?" asked the undismayed boy.

"The fire is my god," answered the King; "it is the most mighty of beings."

"The fire," said the boy, "is quenched by water, water rises up lightly into the cloud, the cloud is

driven away by the winds, but man can stand against the winds: so man is the most mighty of beings."

"And I am the mightiest of men," said King Nimrod. "Worship me, or the glowing furnace shall be thy reward!"

Then the boy lifted up his modest eyes and said, "I saw the sun rise yesterday in the morning and go down in the evening; command, O King, that, to-day, it rise in the evening and go down in the morning, and then I shall worship thee."

And Abraham was thrown into the furnace.

But the flames of the fire did not harm the lad, for an angel came and held him to his breast, and fanned back the flames from him, and they rose round, white and fragrant as the flowers of the lily. The lad came from the furnace more beautiful than when he went into it, and soon after God appeared to him, and called him from Chaldæa, and gave him the great name of His Friend.

And Abraham was the founder, for all time, of the true worship of the one God who made heaven and earth.

QUESTIONS.—Where does this tradition say Abraham was brought up? How old was he when he first saw heaven and earth? What question was it he always asked himself? What did he first think? What made him change? What did he next think? Why did he change his opinion again? What did Terah say to him? What did Abraham then do and say? What did Nimrod command? What was Abraham's answer? What happened in the furnace? What reward did God give him for his fidelity?

THE DEATH OF THE OLD YEAR.—*Tennyson.*

wear-i-ly **stead-i-ly** **jol-li-er** **flick-er**

FULL knee-deep lies the winter snow,
And the winter winds are wearily sighing,
Toll ye the church-bell sad and slow,
And tread softly and speak low,
For the old year lies a-dying.
Old year, you must not die:
You came to us so readily,
You lived with us so steadily,
Old year, you shall not die.

He lieth still: he doth not move:
He will not see the dawn of day.
He hath no other life above.
He gave me a friend, and a true true-love,
And the New-year will take 'em away.
Old year, you must not go;
So long as you have been with us,
Such joy as you have seen with us,
Old year, you shall not go.

He froth'd his bumpers to the brim;
A jollier year we shall not see.
But tho' his eyes are waxing dim,
And tho' his foes speak ill of him,
He was a friend to me.
Old year, you shall not die;
We did so laugh and cry with you,
I've half a mind to die with you,
Old year, if you must die.

He was full of joke and jest,
But all his merry quips are o'er.
To see him die, across the waste
His son and heir doth ride post-haste,
But he'll be dead before.
Every one for his own.
The night is starry and cold, my friend,
And the New-year blithe and bold, my friend,
Comes up to take his own.

How hard he breathes! over the snow
I heard just now the crowing cock.
The shadows flicker to and fro:
The cricket chirps: the light burns low:
'Tis nearly twelve o'clock.
Shake hands, before you die.
Old year, we'll dearly rue for you:
What is it we can do for you?
Speak out before you die.

His face is growing sharp and thin.
Alack! our friend is gone.
Close up his eyes: tie up his chin:
Step from the corpse, and let him in
That standeth there alone,
And waiteth at the door.
There's a new foot on the floor, my friend,
And a new face at the door, my friend,
A new face at the door.

DICTATION.—Use the first verse for a dictation lesson.

THE THREE FRIENDS.—*Herder.*

sum-moned com-mit-ted ac-cused
exe-cu-ted judg-ment re-la-tions
o-ver-looked ac-com-pa-ny.

TRUST no friend till you have proved him: there are many more at the table of feasting than at the door of a prison.

A man had three friends. Two of them he loved very much, but he cared very little about the third, though he was really the truest of them all.

So it was that, after a time, this man was summoned before the king, to give an account of a trust that had been committed to him. Then he asked his friends—"Who among you will go with me and bear witness for me, for I am hard accused, and the king is angry?"

The first of his friends excused himself at once, saying, "that he could not go with him on account of other business." The second went with him to the door of the judgment hall, but then turned back, for fear of the angry judge. But the third, on whom he had built least hopes, not only went with him, but went in and spoke for him before the judge, and bore such witness in his favour, that the judge not only acquitted him, but gave him rich gifts.

Man has three friends in this world: how do they bear themselves in that hour when God calls him to judgment? Money, his best friend, leaves him first and will not go with him. His relations and friends, who are the second in his regard, go with him to the doors of the grave, and then turn back to their

homes. The third, whom, in life, he well-nigh overlooked, are his good deeds. They, alone, accompany him to the throne of the judge; they go before him, and speak for him, and are heard with favour and love.

QUESTIONS.—What advice does the first paragraph give? What happened to the man with three friends? What did he ask them to do? What did the first say? What did the first do? What did the second do? What were the names of the three friends?

DICTATION.—Use the last paragraph for a dictation lesson.

THE DOG IN THE MANGER.—*Æsop.*

ill-tem-pered fu-ri-ous-ly howl-ing wretch-ed

A DOG was lying in a manger which was full of hay, when four horses, for whom the hay had been provided, came to it to eat their supper. But the ill-tempered cur rose the moment they came near, and

snapped and barked so furiously that the poor horses could not get a mouthful. As they were about to turn away hungry the farmer came up, and saw how things stood. Hitting the dog a good thump with his stick he sent it out of the manger howling, and added, as it ran off—"You wretched cur—you can neither eat the hay yourself, nor will you let others eat it that can—you well deserve what you've got."

QUESTIONS.—Where was the dog lying? What did it do when the horses came for supper? What did the farmer say and do? What lesson should you take from this fable?

DICTATION.—Use the fable as it stands for a dictation lesson.

HOME.—*James Montgomery.*

Born at Irvine, Ayrshire, 1771; died at Sheffield, 1854.

THERE is a land, of every land the pride,
Beloved by Heaven o'er all the world beside;
Where brighter suns dispense serener light,
And milder moons emparadise the night;
A land of beauty, virtue, valour, truth,
Time-tutored age, and love-exalted youth.
The wandering mariner, whose eye explores
The wealthiest isles, the most enchanting shores,
Views not a realm so bountiful and fair,
Nor breathes the spirit of a purer air;
In every clime the magnet of his soul,
Touched by remembrance, trembles to that pole;
For in this land of Heaven's peculiar grace,
The heritage of nature's noblest race,
There is a spot of earth supremely blest,
A dearer, sweeter spot than all the rest,

Where man, creation's tyrant, casts aside
His sword and sceptre, pageantry and pride,
While in his softened looks benignly blend
The sire, the son, the husband, brother, friend;
Here woman reigns; the mother, daughter, wife,
Strew with fresh flowers the narrow path of life!
In the clear heav'n of her delightful eye,
An angel-guard of loves and graces lie;
Around her knees domestic duties meet,
And fireside pleasures gambol at her feet.
Where shall that land, that spot of earth, be found!
Art thou a man?—a patriot?—look around;
Oh, thou shalt find, howe'er thy footsteps roam,
That land *thy* country, and that spot *thy* Home.

OUTLINES OF ENGLISH HISTORY.

I.—THE ROMAN PERIOD.

B.C. 55 to A.D. 410.

1. B.C. *55*. BRITAIN was known for centuries before Christ, for its tin mines and trade in skins, but the first authentic history begins with the invasion of Julius Cæsar, B.C. *55*. His "Commentaries" supply the earliest detailed notices of our ancestors or their country. He came over from a port between Calais and Boulogne, and landed in August B.C. *55*, near Deal, in Kent, but left our island again in September. Next year (B.C. 54) he returned with a great fleet and strong army, but his success could not have been great, for he very soon went back again to Gaul (France), and the Romans did not trouble England any more for nearly 100 years. The British, in Cæsar's day, were of the Celtic race.

2. In A.D. 43, the Emperor Claudius came with his generals Plautius and Vespasian (afterwards emperor), who made the first serious conquests.

3. In A.D. 50 or 51, Caractăcus, the leader of the British, was defeated, and taken to Rome, to grace the conqueror's triumph.

4. A.D. 58. Suetonius Paulinus, another Roman general, subdued the island of Anglesea (Mona), the great seat of Druidism, which was the religion of the ancient British. The priests seem to have kept alive a spirit of resistance to the Romans, and their superstitions were, besides, bloody and hateful.

5. In A.D. 61, Boadicea, queen of some confederated tribes of British, rose in revolt, and massacred the Romans in London (Londinium) and the district round it, but she was routed by Suetonius. This was in the reign of Nero.

6. In A.D. 78, Agricola received the command in Britain, and it was only under him that the conquest was finally completed. His wisdom, firmness, and gentleness first subdued the minds of the British, and gave the Romans a firm footing in the island. He invaded Scotland, and defeated its tribes near the Grampians, thus extending the Roman province to the line between the Forth and Clyde, which he held by strong garrisons and forts.

7. A.D. 121. The Emperor Hadrian built a great wall from the

mouth of the Tyne to the Solway Firth, to keep back the tribes beyond, Agricola's garrisons and forts having proved insufficient.

8. A.D. 138. The Emperor Antoninus built a wall on the base of Agricola's forts, between the Forth and the Clyde. But the island was yet far from quiet in the north, for

9. In 211, the Emperor Sevērus rebuilt the wall Hadrian had raised ninety years before. His army spent two years in building it. Sevērus died at York (Eboracum) A.D. 211.

10. In A.D. 306, Constantine the Great was proclaimed emperor at York, where his father had just died.

11. In A.D. 314, three British bishops were present at a council at Arles, a town fifty-four miles from Marseilles, in Southern France. Christianity must, thus, have been introduced into Britain much earlier than this date, but when, is unknown.

12. In A.D. 360, a great invasion of the Picts and Scots took place, carrying ruin far and near among the British, who had learned the Roman arts and civilization during their long subjection to Rome.

13. In A.D. 410 the Emperor Honorius finally withdrew the last Roman soldiers from Britain, leaving it a prey to the northern tribes who had given it little rest for many years. Rome itself had been taken by the Goths the year before, and its empire was sinking in blood and fire, in all its provinces.

QUESTIONS.

1. For what was Britain known to an early antiquity? To whom do we owe our first fuller knowledge of it? When did Cæsar invade Britain? Where did he land? How long an interval elapsed, after Cæsar's departure, before the Romans again invaded Britain?
2. When did Claudius and his generals invade it?
3. What prisoner was taken seven or eight years after?
4. What religious system prevailed in Britain? Where were its head quarters? What Roman general subdued them?
5. What queen rose in revolt soon after? Give the date and particulars.
6. What general governed Britain in A.D. 78? What do you know of him?
7. What emperor built a great wall? Why did he build it, and where, and when?
8. What second wall was built? Where was it built, and by whom, and when?
9. Who strengthened Hadrian's wall, and when did he do it?
10. Who was proclaimed emperor at York, and when was it?
11. What happened in 314? What does it show?
12. What happened in 360?
13. When were the Roman soldiers withdrawn? Why were they withdrawn? What had happened to Rome the year before?

II.—THE ANGLO-SAXON PERIOD.

FROM THE END OF THE ROMAN GOVERNMENT TO THE BIRTH OF ALFRED (410—849).

1. The state of England after the departure of the Romans grew more and more wretched. The northern tribes broke in on it, in every direction, and tribes of Saxons, Angles, and Jutes, all of the Germanic stock, came over, some say by invitation, to help in repelling the Picts and Scots, but, as it proved, not less as invaders on their own account. A long period of confusion and local anarchy followed, out of which, after one hundred and fifty years, various Saxon so-called kingdoms slowly emerged. But these kingdoms were themselves far from settled or lasting. The British were forced into Wales and Cornwall, for the most part, and England became Saxon.

The Saxon kingdoms were:—

	A.D.
1. Cantia, or Kent, said to have been founded	457
2. South Saxony *(Sussex)* and Surrey	490
3. West Saxony, or Wessex . . . . . (Hants, Berks, Wilts, Dorset, Somerset, and Devonshire.)	519
4. East Saxony (*Essex*, Middlesex and part of Herts) . .	527
5. Northumbria (*North of the Humber*) . . . . . (Northumberland, Cumberland, Westmoreland, Durham, Yorkshire, Lancashire, and part of Scotland.)	547
6. East Anglia . . . . . (Norfolk (*North Folk*), Suffolk (*South Folk*), and Cambridge.)	547
7. Mercia . . . . . All the middle counties— (Cheshire, Stafford, Derby, Warwick, Worcester, Shropshire, Hereford, Gloucester, Oxford, Buckingham, Bedford, Huntingdon, Northampton, Rutland, Leicester, Nottingham, Lincoln, and part of Herts).	582

These kingdoms are generally known as the Heptarchy, or rule of seven kings; but they were independent States, without any union, except on special occasions, and their limits, which were defined only slowly, and after many fluctuations, were not permanent.

2. Under the Angles and Saxons, the name of the country became *England*, the Angles being the most numerous and powerful of the Saxon population. The language, also, was called, from them, *English*.

3. To the conquest of England by the Saxons we owe many of the best features of the English character—industry, love of liberty, readiness to abide by law, and respect for woman. These have made England, in great measure, what it is.

4. The language of Britain, when the Romans came, was Celtic, that is, like the Welsh, Irish, and Highland Scotch. Before the Romans left, in 410, Latin had become very generally spoken. No fewer than 29,354 words of Latin origin are now in use, but many of these have been introduced at a later period. After the Romans left, the Saxon became predominant, impressing its grammar and structure permanently on the language, though the Anglo-Saxon words in it are only 13,330, or less than half as many as the Latin. After the Conquest (1066), Norman-French was introduced, but it remained the language of the Court and of the Norman invaders, and never took root to any such extent as to affect the character of English to any great degree.

5. The Saxons were heathen, as may be seen from their names for the days of the week:—

Monday, or the day of the Moon.
Tuesday, Tiv's day (the god of war).
Wednesday, Woden's day (the chief god of the northern mythology, better known as Odin).
Thursday, Thor's day (the god of thunder).
Friday, Friga's day (wife of the great god Odin).
Saturday, Saturn's day—a name adopted by the Saxons from the Romans.

6. A.D. 597. Ethelred, king of Kent, received Augustine and some missionaries sent with him from Pope Gregory the Great favourably, and gave him leave to raise the first church of this new period of Christianity in England, at Canterbury. In 604, Sebehrt, king of the East Saxons, also received missionaries, and built the first humble structure for Christian worship on the site of the present St. Paul's, in London. But Christianity made very slow progress through England.

7. For four hundred years after the Romans left Britain, things were very unsettled, war following war between the different

tribes. It was wild, lawless, and stormy for all these four centuries. Gradually, however, the stronger states crushed the weaker, till Kent, Sussex, Essex, and East Anglia disappeared as states, and the union of England under one ruler became slowly possible.

8. In 737, Ethelbald claimed to rule over all the country south of the Humber, but he was soon defeated.

9. In 823, more than four hundred years after the Romans had left, Egbert had for the first time really gained sway over England, and became thus the first King of England, from the Humber, south. So slowly did the land fall into order.

KINGS FROM EGBERT TO ALFRED.

Egbert	A.D. 827—837	Ethelbert	A.D. 858—866
Ethelwulf	,, 837—858	Ethelred	,, 866—871
Ethelbald	,, 858—860		

QUESTIONS.

1. What was the state of England after the Romans left? What German tribes began to come over very soon after? Give the names of the seven Saxon kingdoms, and the counties they embraced? What name is given to these seven kingdoms? Were they well established and permanent?

2. What new name did Britain get? From what is this name taken?

3. What do we owe in our character as a nation, to the Saxons?

4. What was the language before the Roman occupation? What was it after it? How many Latin words are there in English? How many Saxon words are there?

5. What were the Saxons as to religion? Give the names of the days of the week and their meaning.

6. What king first allowed Christianity to be introduced again, and when did he do so? Who followed his example, and when?

7. What was the condition of England for 400 years after the Romans left?

8. Who first claimed to rule over England from the Humber, south?

9. Who first really did so, and when did he reign?

III.—ALFRED TO HAROLD II.

A.D. 871—1066.

Alfred	A.D. 871—901	Ethelred II.	A.D. 979—1016
Edward the Elder	,, 901—925	Edmund Ironside	,, 1016—1016
Athelstan	,, 925—940	Canute	,, 1017—1035
Edmund	,, 940—946	Harold I.	,, 1035—1040
Edred	,, 946—955	Hardicanute	,, 1040—1042
Edwy	,, 955—958	Edward the Confessor	,, 1042—1066
Edgar	,, 958—975	Harold II.	,, 1066—1066
Edward the Martyr	,, 975—979		

1. Two hundred more years had to pass before England rose

from the chaos and darkness of evil and troubled times to be one land and one people, under one king.

2. In A.D. 787, a new enemy had appeared on the coasts—the Danes, or Northmen (whence *Normans*), who had long been known in the south of Europe as fierce and terrible pirates. From that date, year by year saw more numerous inroads by them, so that the land was, once more, in the deepest trouble, almost as soon as the wars between the rival Saxon states had been ended under Egbert, and this trouble lasted for very many years, till great part of England was depopulated, and utter misery had spread far and wide. The Danes were of the same German or Teutonic race as the Saxons, and they were still heathen. The Saxons, on the contrary, were slowly becoming Christian.

3. In 849, **Alfred the Great** was born. He began to reign in 871. For the first eight years he was continually beaten by the Danes, who reduced the Saxons to slavery. At last, in 878, he utterly defeated them, and reigned in peace, devoting himself to raising his country in every way, till his death in 901.

4. In 938, Alfred's grandson, **Athelstan,** won a great battle over the Danes and Scots, who had joined to try to conquer England. His father, **Edward the Elder**, had had a sad reign from family wars, but the Danes did not trouble him. Athelstan put a copy of the Bible, in Saxon, into every church.

5. 991. Though thus defeated for the time, the Danes soon returned, and had finally to be bribed to leave England alone, by payment of a tax to them, called the Danegeld, or Dane's money.

6. 1002. Many Danes had settled in England, and were massacred by order of the king (**Ethelred**).

7. 1013. After ten years' fearful war, **Sweyn**, king of Denmark, who had come over to avenge the massacre, was victorious, and was proclaimed king of England.

8. 1014. On the death of his father **Sweyn, Canute** was chosen king by the Danish army.

9. 1017. **Canute,** on the death of **Edmund**, the Saxon king, became undisputed king of all England, the Danes having thus, at last, wrested the sceptre from the Saxons.

10. 1042. The Saxons rose against the Danes after the death of Canute's two sons, and **Edward III., the Confessor**, restored the Saxon line, after an interval of twenty-eight years. He was said to have promised William, Duke of Normandy, the succession to the throne after him, he himself being childless, and this formed the

ground of William's invasion after his death. He was called the Confessor because he lived like a monk, rather than a king.

11. 1066. Harold II., grandson of Canute, claimed the throne, but was defeated and slain at Hastings by William of Normandy, October, 1066, and thus the Norman Conquest was accomplished.

NOTED MEN OF THE SAXON PERIOD WHOSE NAMES HAVE REACHED US.

A.D. 449 to 500. Few illustrious names survive from British times, and these few mostly fabulous. Merlin, the magician, famous in Shakspere, lived in this century. The names of some of the British clergy also, still survive, as those of learned men, but all light was fading out before the troubles of the times.

A.D. 501 to 600. GILDAS, the historian; but his history is very short, meagre, and poor.

COLUMBA, or COLUMKILL, a learned and godly monk. He founded the monastery at Iona, and spread light and religion in the dark regions round.

A.D. 601 to 700. ALDHELM, Bishop. The first Englishman who wrote in Latin. His songs and ballads were famous, and suited the age. He wrote a Latin grammar. Died 709.

THEODORE, Archbishop of Canterbury. He did much to instruct the English youth.

The VENERABLE BEDE, a monk, born at Wearmouth A.D. 672, died 735. Wrote a famous Ecclesiastical History and translated the Scriptures into Anglo-Saxon.

A.D. 701 to 800. ALCUIN, the friend of Charlemagne, born 735, died 804. The most learned and brilliant man of his age.

WINFRED or BONIFACE, born in Devonshire 671. Martyred in Friesland 755. The Apostle of the Germans.

A.D. 801 to 900. JOHN SCOTUS ERIGENA, a great scholar, traveller, and philosopher.

KING ALFRED, a man of wonderful culture, genius, and high intellectual power of all kinds. His "Works" fill several volumes.

ASSER — a learned monk — King Alfred's tutor. Wrote Alfred's Life.

ELFRIC, the grammarian. Translated two folio volumes of Latin homilies into Saxon, for the use of the people.

A.D. 901 to 1000. DUNSTAN, Archbishop of Canterbury, an eminent statesman and scholar.

1001 to 1066. No name of this period survives. War and misery drew darkness over the land.

QUESTIONS.

1. How long a time passed from the Romans leaving till England was finally united under one king? How long a time elapsed from the birth of Alfred before this happened?

2. What new enemy appeared in the close of the eighth century? Name the year of their first appearance. To what condition did they reduce England?

3. When was Alfred born? What success had he in repelling the Danish invaders? To what did he devote his after reign? When did he die?

4. What happened in 988? What did Athelstan put in the parish churches?

5. What plan was at last taken to rid the land of the Danes? What king proposed the Danegeld?

6. What wicked act was perpetrated on the Danes in 1002?

7. What followed? When?

8. and 9. Who succeeded Sweyn, and when did he begin to reign?

10. When did the Saxons regain power? How long had Danish kings reigned? Why was Edward called the Confessor? What promise was he said to have made to William of Normandy? When did he die?

11. Who claimed the throne on Edward's death? Who opposed him? Which conquered, and where? When?

IV.—THE NORMAN LINE.

A.D. 1066 to A.D. 1154.

MONARCHS OF THE TIME.

England.	France.	Germany.
William I. (the Conqueror) 1066 to 1087	Philip I. 1060 to 1108	Henry IV. 1056 to 1106
William II. (Rufus) 1087 to 1100	Louis VI. 1108 to 1137	Henry V. 1106 to 1124
Henry I. 1100 to 1135		Lothaire II. 1125 to 1138
Stephen, 1135 to 1154	Louis VII. 1137 to 1180	Conrad III. 1138 to 1152
		Frederic I. 1152 to 1190

1.—WILLIAM THE CONQUEROR.

FIRST NORMAN KING. A.D. 1066–1087.

1. The Conqueror, after the Battle of Hastings, marched to London, but its gates were closed, and he did not venture to enter till he had built **The Tower**, to command it. He was crowned at Westminster (not then a part of London) on Christmas Day, 1066. A great tumult rose at the coronation. William began his reign well, striving to gain the goodwill of the English by justice and respect for their laws. But the people rose in revolt, once and again, and bloody punishment followed, with the confiscation of the land throughout wide districts. The distribution of these districts among his officers, on condition of their rendering him and his successors military service, was the rise of the **Feudal System**. Sixty thousand such grants of land, some of great extent, were made by William to his friends and followers. The population of England was then about 2,000,000. William died of a fall from his horse, at Rouen, in Normandy, 1087.

2. The English murdered so many Normans that a law was made to punish the whole district in which a Norman thus perished. This was successful. The Curfew Bell—or bell to "cover the fire," that is, to extinguish all lights—was rung in every parish at eight each night.

3. William was passionately fond of hunting, and to make a wide tract for the wild beasts, he laid waste all the region now called the **New Forest**, destroying many villages to do so.

4. His family gave him great trouble. Robert, the eldest, tried to wrest Normandy from him. He got it at William's death. There were three sons, Robert, William, and Henry.

5. The Survey or Domesday Book, made in his reign, by William's order, gives a list of all the estates in England, the quantity of land cultivated, the cattle, &c., and, in fact, a view of England as it was at that time.

QUESTIONS.

1. When was the battle of Hastings fought? Did William enter London at once? What fortress did he cause to be built? Was Westminster then in London? When was William crowned? What happened at the Coronation? Did he reign quietly? What spirit marked his earlier reign? What followed the risings of the English? What conditions did he require from those who received grants of land? What was the system he thus introduced called? How many such grants were there? What was the population of England then? When and how did William die?

2. What law was made respecting the murder of Normans? What was the curfew bell? What spirit in the English would these two laws seem to indicate?

3. What did William do to gratify his love of hunting?

4. Was his family loving? How many sons had he?

5. What was Domesday Book?

2.—WILLIAM II. (Rufus, the Red King).

SECOND NORMAN KING. A.D. 1087.—A.D. 1100.

Chief Event.—The First Crusade.

1. The Conqueror, on his deathbed, named his son William as his successor, and he instantly left his dying father and fled to England to secure the throne. He was a bad man—hard, heartless, and profligate. The English disliked his elder brother Robert as a foreigner, but William had been brought up amongst them. Under him England was already separate from Normandy, but William got that province again for a sum paid to Robert to help him to join the first Crusade in 1096.

2. The relations of the conquered English and the Norman conquerors were those of master and slave, as far as might be, during this reign, and to this may, perhaps, be attributed William's death. He was found shot through the heart by an arrow, in the New Forest, where he had been hunting, no one ever knowing who shot him. It was said to have been a French knight—Sir Walter Tyrrel—but he to the last denied it.

3. In the Red King's reign the first Crusade set out to deliver Jerusalem from the Turks. The vanguard of 40,000 men was cut to pieces by the Turks in Asia Minor, but the main body, of 600,000 men, under Godfrey of Bouillon, followed soon after and took Jerusalem on the 15th July, 1099. The Pope then reigning was Urban II.

4. England, now safe from Danish pirates, had already begun to rise even under the Red King. Bridges took the place of ferries over many rivers; new roads were cut through the country, and castles and churches of stone were built. The White Tower, in London, Westminster Hall, and a stone bridge over the Thames were built in this reign.

QUESTIONS.

1. To whom did the Conqueror leave the succession to the English throne? What kind of a man was he? Why was he chosen to the Crown? Did he get Normandy at all? How?

2. How did the Normans treat the English in this reign? How was Rufus killed?

3. When did the first crusade set out? What was its object? What success had it?

4. What signs of progress did England show under Rufus? Name some of the architectural triumphs of his reign.

3.—HENRY I., BEAUCLERC (the Good Scholar).

THIRD NORMAN KING. A.D. 1100—A.D. 1135.

Chief Event.—The lessening of the power of the Barons.

1. Henry, the youngest son of the Conqueror, was thirty-two years of age when his brother William, the Red King, was killed. He was the first King of the Norman line who was of English birth. His brother Robert, who had been supplanted by William Rufus, was now a second time supplanted by Henry, who was as crafty, strong-willed, and clever as Robert was lazy and simple. Robert had not come back from the Holy Land when William was killed, and he only arrived in Normandy a few weeks after Henry had seized the crown. William was killed on the 1st of August, and Henry was crowned on the 5th, so energetically had he acted.

2. As he had no rightful title to the crown, he made many concessions to the people to gain their support. He gave them back the laws of Edward the Confessor, for which they had long clamoured. He also lightened the feudal claims on his vassals. But these concessions soon fell into disuse.

3. Rufus had offended the nation by his profligacy, but Henry, on his accession, dismissed the courtiers who had ministered to his brother's vices. He further conciliated the people by marrying a Saxon, the daughter of the King of Scotland and Matilda, sister of Edgar Atheling, the dispossessed heir of the Saxon kings—a marriage viewed by the Normans much as that of a planter with a quadroon girl would have been, while slavery existed, in the slave-holding States of America. But it was a very wise step, for it opened the way to the union of the Norman and Saxon races, and the making them into one nation.

4. In 1101 Robert invaded England to gain the crown, but Henry found means to make him renounce his claims. Soon after, Henry took advantage of some of the barons having aided Robert, to weaken them by heavy fines or by banishment—a step which

pleased the people, who were thus freed from some of their oppressors.

5. Robert's weak government in Normandy exposed Henry to constant danger from the war and confusion reigning there. Henry was, besides, ambitious, as well as able, and determined to dispossess Robert.

6. In 1106 he conquered Robert and took him prisoner, keeping him for twenty-eight years in captivity in Cardiff Castle.

7. In 1120 Henry's son and heir was drowned, with 300 persons, including 140 ladies and nobles, in the *White Ship*, on its passage from Barfleur, in Normandy, to England. On hearing of it Henry's proud heart was so moved that he fell to the ground.

8. He had now only a daughter, Matilda, Empress of Germany. She became a widow in 1124, and in 1127 was married to Geoffrey Plantagenet (so called from wearing a sprig of broom—*Planta genista*—in his cap), son of the Earl of Anjou, and they became the parents of the Plantagenet kings. Henry spent his later years very much with his daughter, and died in Normandy in 1135, leaving his dominions to her.

QUESTIONS.

1. How old was Henry when Rufus was killed? What distinguished him from his brother and father as to his birth? Was he the lawful heir? Where was Robert when Rufus was killed? In how many days after his brother's death was he crowned?

2. What steps did he take to strengthen his hold on the people? Were these concessions acted on permanently?

3. What did Henry do with the profligate courtiers of Rufus? Whom did he marry? For what did this pave the way?

4. What happened in 1101? Did Robert get what he sought? What steps did Henry take with the barons? What benefit was this to the people? What did Henry resolve to do respecting Normandy?

5. What happened in 1106? How long was Robert a prisoner, and where was he confined?

6. What happened in 1120. How many great personages were drowned?

7. After his son's death whom did Henry name as his successor. Whom did she marry? What is the origin of the name Plantagenet? What kings sprang from this marriage of Henry's daughter? Where and when did Henry die?

4.—STEPHEN.

FOURTH NORMAN KING. A.D. 1135—1154.

Kings of Scotland—David I., 1124 to 1153.
" " Malcolm IV., 1153 to 1165.

1. When Henry I. died, his daughter's son (afterwards Henry II.) was only two years old, and she herself, though adopted as Henry's heir, in 1126, by the barons of England, was very unpopular, from her pride.

2. Henry had invited to his Court the sons of his sister Adela, wife of the Count of Blois, and one of them, Stephen, was with him when he died. Stephen was very popular with the masses, and instantly, on Henry's death, set off for England, to seize the crown. Though Henry had died only on the 1st December, so well organised had the plot been for Stephen's usurpation that he was crowned on the 26th. Very likely the dread of a female reign in such troublous times helped his success. There had not been a queen as yet in England.

3. The barons were, as a rule, petty tyrants and robbers, and Stephen, at the beginning of his reign, did good service by going in person against them. But Matilda's party soon gave him trouble. To lessen the power of the great lords under these circumstances, he distributed large portions of the Crown lands to new men, who, in many cases, were allowed to build castles. One hundred and twenty-six were thus built, and the new barons joining with the old, made the nobility more powerful than ever.

4. A.D. 1138. David of Scotland, uncle of Maud, invaded England on her behalf, wasting the land before him. He was defeated at a battle fought near Northallerton, and called the Battle of the Standard, because the English were gathered round a tall cross, raised on a car, surmounted by banners of saints.

5. 1139. Stephen lost the advantage which this victory might have given, by quarrelling with some of the bishops, especially with the Bishop of Salisbury, who had four castles and many powerful friends. Within a month after, Matilda and her half-brother, the Earl Robert, her great supporter, were in England.

6. The Church was very powerful in Stephen's reign. Before its close the Cathedrals of Durham, Canterbury, Rochester, Chichester, and Norwich had been begun, and 300 monasteries had been founded over the country. Many of the high clergy were already rich and powerful.

7. 1141. Stephen was taken prisoner at the Battle of Lincoln, and Queen Matilda became queen for the next eight months; but London stood firm to Stephen, who was exchanged for the queen's half-brother, and thus got his liberty again. In 1150, the civil war between Stephen and Matilda, which had lasted for eight years, ended. Stephen was also reconciled to the Church, and in 1153 made an agreement with Henry Plantagenet by which he was to retain the throne till he died and Henry was to succeed him. He died in 1154.

QUESTIONS.

1. How old was Henry II. when Henry I. died? Whom had Henry named as his successor?
2. Whose son was Stephen? Why did the people dislike Matilda? Why did the barons feel averse to having a queen?
3. What was the character of the barons? How did Stephen seek to lessen their power? What success had his plan? Whose party gave Stephen trouble?
4. What happened in 1138. Why did the battle get its name?
5. How did Stephen lose the fruit of his victory? What followed?
6. What cathedrals had been begun before the close of Stephen's reign? How many monasteries had been founded in England?
7. What happened in 1141? When did Stephen regain his liberty? How long did the civil war last between Matilda and Stephen? With what agreement did it end? When did Stephen die?

NOTED AUTHORS OF THE NORMAN PERIOD.

LANFRANC, Archbishop of Canterbury, A.D. 1070 (age, 65), Counsellor of the Conqueror, author of theological works.
ANSELM (born, 1033: died, 1109), Archbishop of Canterbury, 1092; eminent theological writer.
ALEXANDER HALES, one of the Schoolmen (died, 1245).
INGULPHUS, Abbot of Croyland, Chronicler (A.D. 1075-1109).
WILLIAM OF MALMESBURY, Chronicler (about A.D. 1140).
HENRY OF HUNTINGDON, Chronicler (about A.D. 1154).
GEOFFREY OF MONMOUTH, Chronicler (died about 1154).

All these authors wrote in Latin. The English language had not yet taken form, and Anglo-Saxon was now discredited by the defeat of those who spoke it. The troubles of the times have their reflection in the fewness of the authors.

THE PLANTAGENET KINGS.

A.D. 1154—1399.

CONTEMPORARY MONARCHS.

ENGLAND.	FRANCE.	SCOTLAND.
HENRY II. 1154-1189	LOUIS VII. 1137-1180	MALCOLM IV....1153-1165
RICHARD I.*.....1189-1199	PHILIP II. 1180-1223	WILLIAM I. 1165-1216
JOHN †.....1199-1216	LOUIS VIII. 1223-1226	ALEXANDER II. 1216-1245
HENRY III.* 1216-1272	ST. LOUIS IX. ..1226-1270	,, III. 1245-1286
EDWARD I.* 1272-1307	PHILIP III. 1270-1285	MARGARET.‡.....1286-1288
	PHILIP IV. 1285-1314	JOHN BALIOL 1288-1296
EDWARD II.* ...1307-1327	LOUIS X. 1314-1316	INTERREGNUM ...1296-1306
	JOHN I. 1316-1316	ROBERT I. 1306-1334
	PHILIP V. 1316-1322	
	CHARLES IV. 1322-1328	
EDWARD III.*..1327-1377	PHILIP VI. 1328-1350	DAVID II. 1334-1371
RICHARD II.‡ ...1377-1399	JOHN II. 1350-1364	
	CHARLES V. 1364-1380	ROBERT II. 1371-1390
Eight Kings, reigning for 245 years.	CHARLES VI. 1380-1422	ROBERT III. 1390-1406

Chief Features of the Period.—The glory and decay of the Feudal System.—Struggles between the English people and Rome, and

* Son. † Brother. ‡ Grandson.

between the Crown and the Barons.—Rising importance of the people.—First steps towards constitutional government and the liberties of England.

I.—HENRY II. (Short Hose).

FIRST PLANTAGENET KING. A.D. 1154—1189.

Chief Events.—Henry's struggle with the Barons and humbling of their power.—His struggle with à Becket and his humiliation at à Becket's tomb.

1. The kings of the new House, no longer, like the Norman kings, looked on England as a conquered country. Authority grew more settled. The people learned to look up to their kings as their protectors against their harsh lords, the barons. The barons, on the other hand, began to assert their independence so as to bring them into conflict with the Throne, and thus began the strife between them and the Crown, which ended in securing the liberty of the people, to whom concessions were constantly being made by both sides.

2. A.D. 1154. Henry was in Normandy when Stephen died, and it was six weeks before he arrived in England. The succession to the Throne had been doubtful for nearly 200 years, but no one could dispute Henry's title. He was twenty-one years of age at his accession.

3. To repair the evils of Stephen's reign, Henry set steadily to the task of substituting law and order for violence and anarchy. He dismissed the foreign soldiery introduced in the civil war, and broke down many of the castles of the barons—those hiding-places of privileged robbers—taking back from them much of the Crown land that Stephen had given them. He, also, allowed no one but himself to issue coinage, and thus changed the face of things for the better.

4. The great conflict of Henry's reign rose after he made Thomas à Becket Archbishop of Canterbury, in 1162. (Becket's age, 43; Henry's, 29.) The Pope claimed power over the English clergy, and the clergy themselves had gradually encroached on the civil power. A great struggle against the rule of a foreign power in England, on the one hand, and against the subjugation of the State by the Church, on the other, had to be fought.

5. Becket, from being a gay courtier, turned a self-denying

priest, as soon as he became Archbishop, and took up the cause of the Pope and the Church against Henry, resisting all his plans so far as they in any way touched even the most questionable rights of the Church.

6. A.D. 1164. Henry called a council (January 25) at Clarendon, Wilts, to limit the power of the clergy, by requiring, amongst other things, that they should be tried by the ordinary judges, and that appeals from Church Courts should be carried to the King and no further—that is, that they should not be carried to Rome. The laws laid down by this Council were called the Constitutions of Clarendon, and led to a final quarrel between Henry and Becket, who, after consenting to the decrees of the Council, repudiated them, and rousing the anger of Henry to the highest by his bearing and language, fled to France.

7. A.D. 1170. Becket, on a reconciliation with the King, returned to England on the 1st of December, 1170, but he presently re-opened the old quarrel with Henry, and was at last murdered by four knights, in Canterbury Cathedral, December 29, 1170. The people, who were very superstitious, were shocked at this catastrophe, and the Church made Becket a saint and a martyr. His tomb became a famous shrine for pilgrimages.

8. A.D. 1169—72. Henry took possession of Ireland, which had been made over to him by the Pope, on condition of his holding it as a fief of the Church, and of his compelling every Irish family to pay something to the Holy See.

9. A.D. 1174. Henry humbled himself at the tomb of Becket, walking barefoot, and submitting to be scourged with a knotted cord. This was to clear himself in the eyes of the people, and to prevent the Church launching its thunders against him.

10. Henry had great trouble from his sons in the later years of his reign. They rebelled, and even stirred up France and Scotland against him. He overcame all his enemies, but he died, July 6, 1189, of a broken heart at seeing the name of his favourite son, John, on the list of those who had joined the French King against him.

18. Henry was a great king: wise, brave, active. His face was ruddy, his chest broad, and though he was rather short, his look and bearing were kingly. He was fond of learning, but haughty, and too often revengeful.

QUESTIONS.

1. What difference was there in the feeling of the Plantagenet kings towards England, from that of the Norman kings? How had the people begun to regard their kings? What was the attitude of the nobles?

2. What advantage had Henry over the kings before him? For how long had the succession to the throne been unsettled? How old was he at his accession?

3. What did Henry set himself to effect as his great purpose, in the beginning of his reign? What reforms did he make?

4. What great conflict rose in 1162? What were the ages of Becket and Henry respectively? What were the points in dispute? To what office was Becket raised in the church?

5. What had Becket been, and what did he become after his being made archbishop?

6. What council was called by Henry in 1164? What was its object? Where was it held? How did it lead to the final quarrel of Henry with Becket? Whither did Becket flee?

7. When did he return? What followed soon after? Give the date. What was thought of Becket's death by the people? What was done respecting him by the Church?

8. What happened in 1169 to 1172? Who had given Henry authority to invade Ireland? What conditions were affixed to the grant?

9. What happened in 1174? What were some of Henry's motives?

10. What caused Henry's death? Where did he die, and when?

11. Describe Henry's character and appearance.

II.—RICHARD I. (Cœur de Lion, the Lion-Hearted).

SECOND PLANTAGENET KING. A.D. 1189—1199.

1. Richard was the eldest surviving son of Henry II. He was born in 1157, crowned Sept. 3, 1189, and married a Spanish princess when abroad, but had no children.

2. Richard reigned for ten years, but of these he was only four months in England. He began preparing to join the first Crusade as soon as he ascended the throne, raising money by any means, however harsh or reckless. Scotland, which was then tributary to England, was absolved from further payment, in return for a sum of money given to help the King's darling project.

3. In 1191 and 1192 he laid siege to Acre, and other cities of the Holy Land, wresting them from Saladin, the Emperor of the East. The French King (Philip II.), with whom he had gone to Palestine, withdrew his troops from that country, and left Richard to fight the Saracens single-handed.

4. A.D. 1194. Richard left Palestine in a single vessel for England, but being wrecked in the north of the Gulf of Venice, was taken prisoner by the Duke of Austria, with whom he had quarrelled in the Holy Land, and by him delivered to Henry VI., Emperor of Germany, his enemy, who kept him captive for fifteen months, till he was ransomed for a sum equal to £400,000 of our money, and returned to England.

5. The absence of the King left England a prey to the saddest confusion. His brother John tried to get the throne, but was pardoned by Richard on his return. Charters to cities and towns were given in this reign, for money—a great step towards public liberty, though yielded in an ignoble way.

6. Richard died of a wound from an arrow, while besieging the Castle of Châlus, near Limoges, in France. It was a good trait in him that he caused his body to be buried at his father's feet, to show his sorrow for his unworthy conduct to him. He died in 1199.

7. Richard was generous and "lion-hearted," fond of poetry and the arts, but a soldier rather than a king. His bright auburn hair, blue sparkling eyes, grand person, mighty strength, and great deeds, made him be long remembered even in the Holy Land; the very Saracen mothers quieting their children when troublesome by telling them that "Richard" would come if they were naughty.

QUESTIONS.

1. Who was Richard I.? When was he born? When was he crowned? Whom did he marry?
2. How long did he reign? How long, during his reign, was he in England? For what did he prepare as soon as he came to the throne? How did he raise money?
3. To what town in Palestine did he lay siege in 1192? Did the French king stand firmly by him?
4. When did Richard leave Palestine? What happened to him? How long was he prisoner? How was he freed?
5. In what condition was England in his absence? How did John, Richard's brother, behave? How did Richard act towards him?
6. Where and how did Richard die? What last command did he make respecting his burial?
7. What was Richard's character? What was his personal appearance? What curious fact shows that he was long remembered in the Holy Land? What kings reigned in France and Scotland at the same time as Richard reigned in England?

NOTED MEN OF THE TWELFTH CENTURY, 1100—1199.

STRONGBOW, the general of Henry II., in Ireland.

NICHOLAS BREAKSPEARE, the only Englishman who was ever Pope. He became Adrian IV., and was choked by a fly after he had reigned five years.

There were also historians, lawyers, and divines, famous in their day, but now almost forgotten.

III.—JOHN (Lackland).

THIRD PLANTAGENET KING. A.D. 1199—1216.

Chief Events.—John's doing homage for the Crown of England to the Pope.—His granting Magna Charter.

1. John was born in 1166, and succeeded his brother, the Lion-hearted King. He reigned from 1199 to 1216.

2. His character was base and hateful. Cowardice, ingratitude, and even murder are justly charged against him. He murdered his nephew Arthur, son of his elder brother, and rightful heir to the crown, and imprisoned his sister till she died, a crime which lost him his French provinces by the war it occasioned.

3. John showed himself a tyrant towards his subjects, and quarrelled with the Pope, who laid the kingdom under an interdict in 1208, forbidding all religious services while it lasted. John, on this, yielded in terror, recalling some clergy he had banished, and doing homage for the crown of England to Pandulf, the Pope's legate, to whom he resigned it, receiving it back from him in five days.

4. In 1215, soon after this humiliation before the Pope, the Barons, and the Bishops, with Cardinal Langton, Archbishop of Canterbury at their head, forced John to agree to Magna Charta—a code of laws limiting the claims of the Pope and of the King, and securing the right of all freemen to enjoy the ancient laws of the realm. It was signed by John at Runnymede, near Windsor, June 19, 1215. It has since been confirmed thirty-eight times.

5. John died, in 1216, of a fever.

QUESTIONS.

Chief Events. — What were the leading events of John's reign?

1. When was John born? How long did he reign?

2. What was his character? Mention some of his crimes? What followed from his imprisoning his sister?

3. How did John act towards his subjects? With whom did he quarrel? What followed? What effect had this on John? For what did John pay homage to Pandulf?

4. What was the Magna Charta? By whom was it wrung from John, and where, and when? How often has it been confirmed since?

5. When did John die?

Noteworthy Facts.—London Bridge was completed 1209.—The yearly election of a mayor and two sheriffs by the citizens of London began in 1208.—Chimneys were first used in houses about 1200.—John was infamous for his extortions from the rich Jews of England. The Jews were largely the money-lenders of the Middle Ages, and also the slave traders, as long as white slaves were bought and sold. Hence, in great part, the prejudice against them in those days.

Noted Men.—Cardinal Archbishop Langton, 1151—1228. He was the author of Magna Charta, and he divided our Bible into chapters and verses.—Between William the Conqueror and John nearly 200 Anglo-Norman writers flourished.

IV.—HENRY III.

FOURTH PLANTAGENET KING. A.D. 1216—1272.

Chief Event.—Rise of the House of Commons.

1. Henry III. was born at Winchester in 1207. John had lost the regalia in a march across the Wash, at the time he caught his last, fatal illness, and hence Henry was crowned with a circlet of gold wire instead of the crown. He reigned from 1216 to 1272, fifty-six years, the longest reign of any king but George III.

2. In 1217, Louis VIII. invaded England, but was twice defeated, and had to return to France.

3. In 1225 and 1229 there was war with France to recover the provinces claimed by England in France, but it ended with little result.

4. The House of Commons dates its origin from 1258; in which year two knights from every shire, now called county members, and one or two burgesses from each borough town, with the barons and clergy, were summoned to Parliament. Hitherto the council of the nation had been only the great barons.

5. Roger Bacon, a great natural philosopher, flourished. He wrote nearly one hundred scientific treatises, and invented magnifying glasses, magic lanterns, and much besides.

6. A stout resistance was maintained during this reign to the claims of the Pope over the English Church.

7. Henry himself was a worthless man, cowardly, suspicious, and untruthful. He died of old age, in 1272, at Bury St. Edmunds.

Noteworthy Facts.—Henry's reign was marked by a number of useful discoveries and inventions. Coal was introduced as fuel instead of wood. Linen was introduced. Leaden pipes were introduced in 1236. Distilling was learned from the Moors, and the mariner's compass was introduced from the East. The houses in London which had till now been thatched, were ordered to be tiled or slated. Gold was coined in 1257. Farthings and halfpence in 1210.

QUESTIONS.

1. Where was Henry III. born, and when? What curious fact characterised his coronation? Give the particulars of the length of his reign?
2. What happened in 1217?
3. What took place in 1225 and 1229, and what was the result?
4. From what year does the House of Commons date its origin? What happened then? Who had formed the National Council up to that time?
5. Who was Roger Bacon? Give details respecting him.
6. To what was a stout resistance offered in Henry III.'s time?

7. What was Henry III.'s character? Of what did he die, and when, and where?
8. Name some of the useful discoveries and inventions of Henry's reign? What improvement was introduced in the construction of London houses in this reign? What advances were made in the national coinage under him?

NOTED MEN.

ROBERT GROSSETESTE, Bishop of Lincoln 1175 to 1253, a great statesman.
SIMON DE MONTFORT, founder of the House of Commons, died 1265.
BRACTON, a great lawyer.
ROGER BACON.
MATTHEW PARIS, the historian, (died 1259.)

V.—EDWARD I. (Longshanks.)

FIFTH PLANTAGENET KING. A.D. 1272—1307.

1. Edward I. was the eldest son of Henry III. He was born in 1237; ascended the throne 1272; was crowned in 1274; and married, first, Eleanor of Castile, and afterwards, in 1290, Margaret of France.

2. A.D. 1269–70. While prince, he and his wife having joined the sixth crusade, he was saved when struck by a poisoned dagger, by his wife sucking the poison from the wound. The crusades lasted from 1090 to 1291 (say 200 years), and Edward was the last English prince who took part in them.

3. A.D. 1282. Edward conquered Wales and annexed it to England. His eldest son, born at Carnarvon Castle, was made Prince of Wales, to please the Welsh.

4. A.D. 1285. Westminster Abbey, which had been sixty years building, was finished this year.

5. Parliament grew into more importance in Edward's reign, and the power of granting money to the Crown came more fully into its hands. Edward also greatly improved the laws. He was very prudent, and favoured the frequent assembling of Parliament, thinking it easier to get money by its vote than to obtain it by arbitrary measures. He ruled vigorously; caused justice to be faithfully administered; restrained the nobles, and encouraged manufactures and commerce. At one period, indeed, when pressed for money for his French wars, he fell back on arbitrary power, and levied heavy taxes and loans at his will, but such a temper showed itself in the people and barons as made him give up this mode of increasing his exchequer. He got the money from the people, but had to sign a charter, promising not to levy taxes again without consent of Parliament.

6. A.D. 1296–1306. Edward had a long war with Scotland, the crown of which he claimed. Wallace and Bruce rose to defend their country, and though the former was taken prisoner and executed in London in 1305, Bruce was crowned King of Scotland in the next year. Edward died while marching against him in the year after that. He was one of the wisest and greatest of our kings.

7. *Noteworthy Facts.*—Windmills and spectacles were introduced in this reign. Paper was also introduced from the East. The first attorney-general was appointed 1278. The first clock used in an English church was put up at Canterbury Cathedral in 1292.

NOTED MEN.

ROBERT BRUCE, King of Scotland, 1274 to 1329.
JOHN BALIOL, claimant of the Scottish crown, and nominated to it by Edward. 1259 to A.D. 1314.
SIR WILLIAM WALLACE, Scottish hero, 1269 to 1305.
DUNS SCOTUS, a famous schoolman, 1265 to 1308.

QUESTIONS

1. When was Edward born? Whose son was he? When was he crowned? Whom did he marry?
2. What notable incident happened to him when abroad on the crusade, with his wife?
3. What great abbey was finished in his reign?
4. What part of the island did he conquer? What honour did he give its people in the title of his son?
5. Did Parliament grow stronger under Edward? In what way did it specially do so? What happened when he tried to extort money by his own power?
6. How did Edward succeed in his war with Scotland? Who was Wallace? What fate befel him? When was Bruce crowned? When did Edward die?
7. Name some of the useful novelties introduced into England during Edward's reign.

VI.—EDWARD II., called Carnarvon.

SIXTH PLANTAGENET KING. A.D. 1307—1327.

1. Edward II., son of Edward I., was born in 1284, began to reign 1307, and died in 1327, after a reign of twenty years. He inherited only the worst part of his father's nature. He was cruel, weak, and of poor capacity. He married Isabella, the handsome daughter of Philip IV. of France.

2. Instead of continuing the war with Scotland, as his father had ordered, Edward concluded a shameful peace, and hastened back to London to spend his time with a foreign favourite—Gaveston—a dissipated and haughty young man, who had been

banished by Edward I., but was recalled as soon as he died, by his son. He made Gaveston the chief man of England, loading him with money and presents, till Parliament, the year after (1308), demanded his banishment. Returning without permission from Parliament, he was finally beheaded, in 1312.

3. On his death, Edward chose two other favourites as worthless, the De Spencers, father and son; but the barons took them and executed them, the one in 1324, the other in 1326.

4. Edward's queen was his greatest enemy. She fell in love with a prisoner in the Tower—Roger Mortimer—helped him to escape to France, met him at Paris, and turned, with him, against her husband, whose mortal enemy he was, came back with him at the head of a foreign force, and, having landed in Suffolk, raised war against Edward, and finally took him prisoner. He was now forced to resign the crown, and was, at last, murdered, with awful cruelty, by his wife's orders, in Berkeley Castle, Gloucestershire, in 1327.

5. Under Edward II. the House of Commons asked that it might meet every year, and this was granted. The Knights Templars, once a very famous order, were suppressed in 1312. Their estate in the Temple, London, was made over to the lawyers.

6. In 1314 the war with Scotland was renewed, but it was ended the same year by the battle of Bannockburn, at which Edward was totally routed by King Robert Bruce.

QUESTIONS.

1. Describe the character of Edward II. Whose son was he? Where was he born? Whom did he marry?

2. Did he continue the war with Scotland? What did he do when peace had been made? What was the name of his first favourite? What was his character? What favours did Edward show him? What did Parliament demand in reference to him? What was his end?

3. What other favourites had Edward after Gaveston? What became of them?

4. What wicked conduct did the queen exhibit? How did she treat her husband? What was his end? When was he murdered, and where?

5. What demand did the House of Commons make in this reign? What famous order was suppressed? In what year did this happen? Who got their lands in London?

6. What happened in 1314?

VII.—EDWARD III.

SEVENTH PLANTAGENET KING. A.D. 1327—1377.

1. Edward III. was the eldest son of Edward II., and was born in 1311; began to reign in 1327, and died in 1377. He was one

of the greatest of our kings; a great warrior, a great statesman, and a kind, humane, and just man.

2. He was only sixteen when he came to the throne, and for a time all the power was in the hands of his mother, Edward the Second's wicked queen, and her favourite, Mortimer. Three years after, in 1330, when he came of age, Edward seized Mortimer and put him to death, and imprisoned his mother till her death, twenty-eight years afterwards.

3. In 1333 Edward defeated the Scotch at Halidon Hill, near Berwick. He had gone to war with them to carry out the design of his grandfather to set Baliol on the Scotch throne.

4. A.D. 1338. Edward's great ambition was to be King of France as well as of England, and in this year he proclaimed war against Philip VI., for having aided the Scotch, and also because the throne of France was then in dispute. His reign, indeed, was for many years a struggle with France. In 1340, the English gained a great naval victory off Sluys in Flanders. In 1340, also, they gained the great battle of Creçy, and in 1346 that of Poictiers, where John, the King of France, and his son, were taken prisoners. Creçy was won in great measure by the valour of Edward's eldest son, the Black Prince, then only fifteen, and Poictiers also was won by him. He was called the Black Prince from the colour of his armour, not from his complexion, which was fair.

5. In 1346, while Edward was on the continent, his queen, Philippa, won the battle of Neville's Cross, where the Scotch King, David II. was taken prisoner.

6. In 1347, after a siege of eleven months, Edward took Calais, which England held till 1558, but during the latter part of his reign, he lost many of his French conquests and resigned Normandy.

7. In Edward's reign the plague raged once and again throughout Europe and Britain. One visitation of it, known as the "Black Death," was especially awful.

8. Edward stoutly defended the rights of England against the claims of the Pope to interfere in the government of the Church. By a law called the Statute against Provisors,* no document appointing to ecclesiastical offices was allowed to come into England from Rome.

9. A Speaker of the House of Commons was appointed in 1376.

* *Provisors* were clergy who had obtained a reversion of benefices and church dignities from the Pope, for sums of money or by favour. They were to get them when those who held them for the time died.

The Commons through this reign successfully opposed taxation not sanctioned by themselves, and in other ways advanced the liberties of the nation. The Lords and Commons first sat in separate houses, in this reign.

10. In 1376 Edward the Black Prince died of consumption, to the great grief of the nation, and

11. In 1377 King Edward, his father, died of a broken heart at his loss.

12. *Noteworthy Facts.*—Gunpowder was invented about 1320, by a German monk named Schwartz. Cannon were first used at Creçy. A clock that struck was made in 1368 for Westminster Abbey. A colony of Flemings who settled at *Worsted*, in Norfolk, in 1327, began the manufacture which takes its name, worsted, from the name of that place. Weaving cloth was also introduced from Flanders in this reign, and Thomas Blanket, of Bristol, first made the bed coverings known since by his name.

13. Chaucer, the first great English poet, lived in Edward III.'s reign, and in that of his grandson, Richard II.—(1328—1400). His "Canterbury Tales" are stories supposed to be told by a company of pilgrims on their way from the Tabard Inn, in Southwark, to the shrine of A Becket at Canterbury, which had now become so famous as the last resting-place of a saint and reputed martyr that pilgrimages were made to it from all parts. The word *canter* shows this very curiously, for it is derived from the pace of the pilgrims' horses on the way to *Canter*bury. The expression originally was "the *Canterbury gallop.*"

14. Winchester School and New College, Oxford, were founded in this reign by William of Wykeham (1324—1403). Froissart, the French chronicler, also lived in it (1337—1401.)

15. It was also the period of John Wycliffe's life. He was the first great Reformer, and began that movement which spread so widely a hundred and fifty years later. He was born in 1324, and died in 1385. He translated the Bible into English.

QUESTIONS.

1. Whose son was Edward III.? When did he begin to reign? How long did he reign? What was his character?

2. How old was he when he began to reign? What did he do with his mother and her favourite, Mortimer? How long did his mother survive in confinement?

3. In what year was the battle of Halidon Hill fought, and against whom? What was the motive that led to the Scottish war?

4. What was Edward's great ambition? What specially led him to go to war with France in 1338? What battles were gained in 1340? By whose valour, especially, was Creçy

won? What great battle was fought in 1346? Who was the great hero of it on the English side? What great prisoners were taken? From what did the name of "The Black Prince" rise?

5. What battle was fought in 1346 in England, by whom, and with what result? What notable prisoner was taken?

6. In what year was Calais besieged? How long did the siege last? How long did the English hold Calais?

7. What calamity visited Europe and Britain more than once in Edward's reign? What plague was especially violent?

8. What attitude did Edward take towards the Pope? What law was passed bearing on this?

9. What high officer was first appointed in 1376? How did the Commons bear themselves towards Edward? What change took place in the relations of the Houses of Lords and Commons?

10. When did the Black Prince die, and of what?

11. When did Edward III. die, and of what?

12. Name, successively, the noted inventions and advances in arts and manufactures in this reign.

13. What great poet flourished in this reign? What Tales did he write? By whom are they supposed to have been told?

14. What has made William of Wykeham's name famous? What was the name of the French chronicler who lived in Richard's reign?

15. Who was John Wycliffe? When was he born, and when did he die?

VIII.—RICHARD II. (Bordeaux).

EIGHTH PLANTAGENET KING. A.D. 1377—1399.

1. Richard II., the son of the Black Prince, and thus grandson of Edward III., was born at Bordeaux in 1366, crowned in 1377, at the age of eleven, deposed in 1398, and murdered in the year 1400, at the age of thirty-six. England was governed by a council of twelve nobles till he was of age.

2. He was twice married, but had no children. He grew up to be a weak and vain man, a prey to flatterers, fond of display and grandeur, and though personally brave, quite unable to keep the rough nobles in their place, or to keep his own position.

3. In 1379 Richard's age being thirteen, a poll or head tax was ordered to be levied, every one over fifteen having to pay a shilling a head, an amount equal to at least twelve shillings of our money, and thus pressing very heavily on the poor, especially on those with families.

4. In 1381 this led to a great insurrection, the peasantry rising in immense numbers to demand the repeal of this and other oppressions. They were headed by **Wat the Tiler**, and entered London, sacking some of the great men's houses, and showing great dislike to the rich generally.

5. Richard came to them at Smithfield on the day after their entry into the city, and there the insurrection was quelled by his bravery and fair words, and by the death of Wat the

Tiler, the leader of the multitude, who was struck from his horse and slain by Sir William Walworth, the Mayor of London, for insolence to the king. Richard's promises to the angry crowd dispersed them, but in violation of his word, he took a great many prisoners, and hanged some hundreds of them. The movement shows that the people were gradually rising to a sense of their rights, though wrong in the way they took to obtain them.

6. Richard's weak and worthless conduct soon turned the hearts of the people against him, and a quarrel having sprung up between him and the son of the Duke of Lancaster, son of Edward III., and therefore his cousin in the second degree, that nobleman, after his father's death, landed in Yorkshire to overthrow Richard, and soon gathered such an army as enabled him to do so, becoming himself Henry IV., the first king of the house of Lancaster. The immediate cause of his acting thus was Richard's having seized his father's estates at his death, and having previously banished himself and the Duke of Norfolk. Richard's overthrow happened in 1399.

7. At the time when Henry landed, Richard was in Ireland; when he got back to England he found that all was lost, and gave himself up to Henry as his prisoner. Next year he was murdered (February 10, 1400), apparently by starvation, in Pontefract Castle.

8. In this reign, the present Westminster Hall was built, and various laws were passed to prevent the encroachment of the Pope on the King's supremacy,—that is, to prevent him having any political power in England.

9. Richard maintained great state during his reign. He had, it is said, ten thousand persons in his household, of whom three hundred were attached to his kitchen alone.

QUESTIONS.

1. Whose son was Richard II.? Where was he born? How old was he when he was murdered? In what year did he thus die?
2. Had he any children? What was his character?
3. What happened in 1379?
4. To what did it lead in 1381?
5. How was the insurrection quelled?
6. What alienated the people from Richard? Whom had he made his enemy, and how had he done this? Where did Henry land?
7. What followed his landing?
8. What great Hall was built in this reign? What laws were passed?
9. How many persons had Richard in his service? How many had he in his kitchen?

ADDITIONAL NOTES ON THE PLANTAGENET PERIOD.

The dress which was in fashion in Edward III.'s reign was very strange. Gentlemen wore boots with toes so long that they were fastened at the knee, by gold or silver chains. Their stockings were of one colour on one leg and of another on the other. Their trousers did not nearly reach the knee, and their coats were one half of one colour, the other half of another, like their stockings. Instead of hats, they wore silk hoods buttoned under the chin, embroidered with figures of animals, &c.

The floors of houses were then spread with rushes, there being no carpets as yet. But as these rushes were left unremoved for months together, a fresh layer being often strewn over the rest, the mass necessarily became very offensive as it grew old, and to this, among other things, may, in part, be traced the terrible sicknesses which visited the land so often. Becket used to have fresh rushes strewn in his rooms every day, lest those who, for want of room at table, had to sit on the floor, should soil their clothes.

The growth of the power of the people was greatly helped by the resistance shown by the Barons to any encroachments on the part of the Crown. Both Crown and nobility were shorn of their power in this struggle, and the mass of the nation rose, in consequence, to greater importance. In the latter part of this period feudalism began to show many signs that the people were gradually outgrowing it, and passing to a freer and more independent condition.

The Cathedrals of York, Salisbury, and Winchester were built under the Plantagenets.

The population of England and Wales, was about 3,000,000—which is less than that of London now.

The Anglo-Saxon language gradually gave way during this period to the English, which in Chaucer's poems is not greatly different from that in use at this day. Many words of Norman French still show themselves in it, but in its main features it is our present English language. Normans and Anglo-Saxons had at last blended into one great nation even in their speech.

WORD LESSONS.—LATIN PREFIXES.

A, Ab, Abs, *from, away, off.*

	Literally.	Hence.
A-vert	to *turn from*	to prevent.
Ab-rupt	*broken off*.....	sudden.
Ab-breviate ..	to *make brief*	to shorten.
Ab-dicate.....	to *speak away* one's rights	to give up, surrender.
Ab-hor	to shrink from with *horror* (which is such a fear as *makes the hair stand on end*)	to loathe.
Ab-ject	*cast away*	mean, worthless.
Ab-solve	to *loose from*	to pardon, set free from.
Abs-tract.....	to *draw away from*	to abridge, to steal.
Abs-tain	to *hold* or *keep from*	as an indulgence, &c.

Ad—with its modifications to suit the sound—Ac, Af, Ag, Al, An, Ap, Ar, As, At, means *to.*

Ad-vert.....	to *turn to*.....	to notice, attend to.
Ad-here	to *stick to*	to remain connected with.
Ac-cede.....	to *come to*	to agree to.
Af-fix	to *fix to*	
Ag-gressor	one *who steps towards another* to attack him	the person who first attacks.
Al-lege	to *send to*.....	to declare, to affirm.
An-nex.....	to *tie to*	to add, to unite to.
Ap-peal.....	to *call to*	to address, to refer to.
Ar-rogate.....	to *lay claim to* as one's own.	
As-sent.....	to *think with*	to agree with, to consent.
At-tract	to *draw to*	to allure, incline to.

Ante, *before.*

Ante-cedent ..	*going before.*
Ante-date.....	to *date before.*
Anti-cipate	to *take beforehand* ..... to foresee.

BENE, *well.*

	Literally.	Hence.
Bene-fit	a *thing well done*	a kindness.

BI, BIS, *two, twice.*

Bi-ped ..... *two-footed.*

CIRCUM, *round.*

Circum-navi-gate ..... to *sail round.*

Circum-spect .. *looking all round* ..... cautious.

Circum-stance what *stands round* a thing .. a detail connected with a particular fact.

CON, *together*—with its modifications, CO, COG, COL, COM, COR.

Con-coct ..... to *boil together* ..... to prepare.

Co-alesce ..... to *grow together* ..... to unite.

Co-eval ..... of *the same age.*

Cog-nomen .... a name *joined to another name*, a surname.

Col-late ..... to *bring* or *lay together* .... to compare, to place in order, &c.

Col-league .... *one chosen with another* .... an associate, partner.

Com-bine ..... to *join two together* ..... to unite.

Cor-rode ..... to *gnaw away by degrees* .... to rust.

CONTRA OR COUNTER, *against.*

Contra-vene .. to *come against* ..... to oppose, to hinder.

Contra-st ..... to *stand against* ..... to set over against for comparison.

Counter-feit .. to *make in opposition to* .... to imitate.

Counter-poise .. to *poise* or weigh *against* some other weight .... to balance by an equal weight.

DE, *from, down, of, concerning.*

De-scend ..... to *climb* or go *down.*

De-duct ..... to *lead from* ..... to infer, to take from.

De-part ..... to *part from* ..... to leave.

	Litorally.	Hence.
De-scribe	to *write from*	to copy, to give an account of.
De-pose	to *put down*	to dethrone, to put out of a high office.

DIS, with its modifications DI and DIF, *asunder, from, not.*

Dis-join ..... to *separate what has been joined.*
Di-verge ..... to *turn into a different path.*
Dif-fer ..... to *carry* (opinions) *opposite ways* ..... to dispute, to disagree.
Dis-arm ..... to *take arms from*..... to make defenceless.
Dis-tract ..... to *draw opposite ways* ..... to perplex, confuse.
Dis-please .... *not* to please..... to offend.
Dif-fuse ..... *poured out in different directions* ..... not concise, widely spread, wordy.

EX, with its modifications E, EF, EC.

Ex-clude ..... to *shut out.*
Ex-ceed ..... to *go beyond* ..... to pass the limits or measure of.
E-mit ..... to *send out*..... to give out.
Ef-fect ..... a *thing done* ..... a result.
Ec-centric .... *out of the centre* ..... singular, odd.
E-ducate ..... to *lead out*..... to train, to instruct.

EXTRA, *beyond, without.*

Extra-ordinary *beyond the ordinary.*
Extra-vagant.. *wandering beyond bounds*.... wasteful.
Extra-vasate .. to *let out* of its *own vessels* (of blood, &c.).

IN, with its modifications IL, IM, IR.
When prefixed to VERBS, means *in* or *into*, *on* or *upon*, or *against.*

In-ject ..... to *throw into.*
In-cite ..... to *rouse against*..... to stir up.
Il-lumine..... to *throw light upon* ..... to make bright.

	Literally.	Hence.
Im-bibe	to *drink in*	to absorb.
Im-becile	*leaning on a staff*	weak, helpless.
Ir-radiate	to *radiate* or *throw rays upon.*	

When prefixed to NOUNS, ADJECTIVES, or ADVERBS, it means *not* or *contrary to* (with modification IG).

In-glorious	*not glorious*	obscure, shameful.
Ig-norant	*destitute of knowledge*	untaught.
Ig-nominy	*without a* (good) *name*	shameful.
Il-legitimate	*not legitimate*	unlawful.
Il-licit	*not allowed*	prohibited.
Im-maculate	*without a spot*	stainless, free from sin
Im-patient	*not patient*	restless, fretful.
Ir-regular	*not by rule*	disorderly.
Ir-religious	*not religious*	ungodly.

INTER, *between* or *among.*

Inter-dict	to *speak or judge between*	to forbid.
Inter-est	*what is between*	what excites concern (towards another).
Inter-change	to *change between*	to exchange.
Inter-lude	a *short play between two others.*	

INTRO (for INTRA), *within.*

Intro-duce	to *lead in*	to make known.
Intro-spection	a *looking within or into.*	

OB, with its modifications, OC, OF, OP, *in the way of, against.*

Ob-stacle	*what stands in the way*	hindrance.
Ob-viate	to *meet in the way*	to remove.
Oc-casion	*what falls in the way* or *happens*	opportunity.
Oc-cur	to *run towards*	to happen.
Of-fer	to *bring to or before*	to tender, to proffer.
Op-pose	to *set in the way of*	to resist.
Op-pugn	to *fight against*	to oppose

PER or PEL, *by, through*, or *thoroughly*.

	Literally.	Hence.
Per-ceive	to *take in*, or see, *thoroughly*	to notice.
Per-chance	*by accident*	perhaps.
Per-dition	the being put *utterly away*	ruin, utter ruin.
Per-mit	to *send through*	to allow.
Pel-lucid	*perfectly clear*	transparent.

POST, *after*.

Post-pone ....to *put off till afterwards*....to delay.
Post-script ....*what is written after.*
Post-prandial..*after dinner.*

PRE, *before*.

Pre-cede .....to *go before* (in turn, rank, &c.).
Pre-clude.....to *shut out beforehand*.....to prevent.
Pre-cocious....*ripe before the usual time.*
Pre-eminent ..*eminent before, or beyond, others.*
Pre-fix .....to *fix or put before.*
Pre-lude .....*something played beforehand*, an introduction.

PRÆTER, *beyond, past*.

Preter-mit ....to *allow to go past* .....to omit.
Preter-natural.*beyond the natural* .....extraordinary.
Preter-ite.....*what is gone by, past* .....the past tense.

PRO, and its modification PUR, *forth, forward, for*, or *instead of*.

Pro-ject' .....to *throw forward*.....to contrive, to plan.
Pro-trude' ....to *thrust forward*.....to thrust out.
Pro-gress' ....to *go forward* .....to advance.
Pro-noun.....a word used *instead of* a noun.
Pur-vey .....to *provide*.....to procure.
Pur-pose.....to *put before one* .....to intend, to aim at.

RE, *back* or *again*.

	Literally.	Hence.
Re-mit	to *send back*	to send, to pardon.
Re-vert	to *turn back*	to reverse.
Re-form	to *form again*	to improve.
Re-new	to *make new again*	to revive.
Re-view	to *view again*	to examine carefully.

RETRO, *backwards*.

Retro-spect	a *looking back*	a review.
Retro-cession	a *going back*	a yielding.
Retro-grade	a *backward step*	to go back.

SE, with its modification SED, *apart, from*.

Se-cede	to *go by one's self*	to separate.
Se-clude	to *shut apart*	to hide in privacy.
Se-crete	to *put apart*, or *in secret*	to conceal.
Se-cure	*free from care*	safe.
Sed-ition	a *going away* (from loyalty)	insurrection.
Se-lect	to *pick out from*	to choose.

SINE.

Sine-cure	a *benefice without cure* or *care of souls*	any office with no duties.

SUB, with its modifications SUC, SUF, SUG, SUP, and SUS, *under*.

Sub-scribe	to *write under*	to sign.
Sub-due	to *lead under the yoke*	to conquer.
Suc-cour	to *run under* (in help)	to assist.
Suc-cumb	to *lie down under*	to yield to.
Suf-fuse	to *pour underneath*	to spread (as a blush).
Sug-gest	to *bring indirectly*, as if *from under*, to the mind	to hint.
Sup-press	to *press under*	to put down, to crush.
Sus-pect	to *look under* (for fear)	to distrust.

SUBTER, *under*.

Subter-fuge	*what one flies under*	a pretext.

SUPER, *above* or *over*.

	Literally.	Hence.
Super-fluous	*overflowing*	in excess.
Super-visor	*one who looks over*	an overseer.
Super-stition	to *believe beyond* what is proper	credulity.
Super-vene	to *come above*	to take place.
Super-human	*beyond human*	divine.

TRANS, with its modifications TRA, TRAF, and TRAN, *across*.

Tran-scend ....to *climb beyond*.....to surmount.
Tran-scribe....to *write over* from one book to another.
Trans-fer.....to *carry over* from one place, &c., to another.
Traf-fic.....trade *done beyond* the seas ..trade.
Tra-jectory....the *curve a body makes when projected.*

ULTRA, *beyond*.

Ultra-montane	*beyond the mountains* (the Alps)	of extreme views as to the Pope's rights.
Ultra-marine	*beyond the sea*	a deep sky-blue.

GREEK PREFIXES.

A or AN, *a* or *av*, *not* or *without*.

A-byss	*without a bottom*	a bottomless gulf.
A-pathy	*without feeling*	indifference.
A-theist	*one without a God*	one who does not believe in a God.
An-archy	*without government*	lawlessness.
An-onymous	*without a name*	used of a book, &c., of which the author's name is not given.

AMPHI, αμφι, *about, on both, round.*

	Literally.	Hence.
Amphi-bious	*living in both* (either *air* or *water*).	
Amphi-theatre	a theatre with seats *all round.*	

ANA, ava, *again, back, up to.*

Ana-baptism	the *baptizing again*	baptism again, on their profession of faith, of those baptized before, in infancy.
Ana-gram	the changing a word or sentence into another, by *writing* the letters *again* in another arrangement	*Instance*— astronomer— moon starer.
Ana-logy	*up to*, or *according to*, *relation* or *likeness*	a similarity.

ANTI, αντι, *against* (written, also, ANT).

Anti-Christ	*against Christ*	the great opposer of Christ.
Anti-dote	what is *given against*	a remedy or preventive.
Anti-pathy	a *feeling against*	hatred, ill will.
Ant-agonist	one who *struggles against another*	an opponent.

APO, απο, *from, away, off* (written, also, AP).

Apo-gee	the point in the moon's orbit	*farthest away from the earth.*
Apo-logy	*speaking oneself out of trouble,*	an excuse.
Ap-helion	the point of the earth's orbit	*farthest from the sun.*
Apo-stle	*one sent out*	a missionary, the name given to the first teachers sent forth by Christ.

AUTO, αυτος, *self, one's own.*

	Literally.	Hence.
Auto-biographer	one who *writes his own life.*	
Auto-graph	*written by one's own hand.*	
Auto-crat	*ruling by one's own power*	by one's self.

CATA, κατα (written, also, CAT), *down.*

Cata-strophe	a *turning upside down*	a disaster.
Cat-echise	to *echo* or *sound* anything *down* into one's mind	to instruct by question and answer.
Cat-egory	what may be *set down* or asserted of a class	a class or order.

DIA, δια, *through, across.*

Dia-meter	a *line through* or *across a circle.*	
Dia-gonal	*through the corners*	a line from the opposite corners of a square.
Dia-pason	the concord *through all* the notes of an octave.	

EN, εν, or EM, *in* or *on.*

En-demic	*in* or *on a people*	a disease, &c., peculiar to a people or locality.
En-caustic	*burned in*	tiles, &c., on which a design is burned in.
Em-phasis	what throws *clearness on*	more forcible utterance of special words in a sentence to show the meaning.

EPI, επι, *upon, on, over, to.*

Epi-demic	*upon the people*	affecting great numbers.
Epi-lepsy	what *lays hold on* one	a sudden convulsion.
Epi-scopate	the office of one who *overlooks* the church	the office of a bishop.
Epi-stle	a writing *sent to* one	a letter.

Ex, ἐξ, *out of.*

	Literally.	Hence.
Ex-odus	a *going out of*	a departure.
Ex-orcise	to *adjure* a spirit *out of*	one.

Eu, εὐ, *well.*

Eu-phony ....*sounding well.*
Eu-thanasia ..an *easy death.*
Eu-logist .....one who *speaks well* of another.

Hemi, ἡμι, *half.*

Hemi-sphere ..*half a sphere* or *globe.*
Hemi-stich ....*half a line* (in poetry).

Hetero, ἑτερος, *different, another.*

Hetero-geneous of *another, different, kind.*
Hetero-dox ....of *another opinion.*

Hyper, ὑπερ, *over, above, beyond.*

Hyper-borean *beyond the north wind* ..... { ancient name for the people of the extreme north.

Hyper-critical *over critical.*

Hypo, ὑπο, *under.*

Hypo-thesis .. { that which is *placed under* (to support an argument) ..... } a theory.

Hyp-hen ..... { a short stroke between two words, making them *into* or *under one.*

Hypo-crite .... { one who keeps *under* or conceals his real feelings —as a player on the stage *hides* his own thoughts and *plays a part.*

Meta, μετα (Met), *beyond, change.*

Meta-morphose to *change* into *another form.*
Meta-phor .... { the *carrying* or *applying* anything *beyond* its proper meaning.
Met-eor .....a *bright body beyond the air.*

PARA, *παρα, beside, from, with, contrary to.*

	Literally.	Hence.
Para-ble	a *placing beside*	a story or fable used to illustrate anything.
Para-clete	*one called to stand beside one*	an advocate, the Holy Spirit.
Para-dox	what is *contrary to* or *beside the common opinion.*	
Para-graph	originally a mark *written beside* the text, to show a division	a separate passage.

PERI, *περι, round about.*

Peri-patetic ..*walking about* .....given to walking.
Peri-od .....a *going round* .....a portion of time.
Peri-phrasis .. a *roundabout way of speaking*—a *circumlocution*, or using more words than are needed.

SYN, *συν* (written, also, as SYL, SYM), *with, together with.*

Syn-od .....a *going together* ..... a meeting, a church council.
Sym-phony ....a *sounding together*, or in harmony.
Syl-lable .....*letters taken together*.....to form one sound.

OLD ENGLISH PREFIXES

A or AN, *in, on, at, to.*

A-bed .....*in bed.*
A-shore .....*on shore.*
A-board .....*on board.*
A-field .....*to the field.*
An-on .....*in one instant* .....immediately.

BE, *nigh, on, to make, by.*

It often has an intensive meaning, and sometimes a privative meaning.

	Literally.	Hence.
Be-wail	to *make a wailing.*	
Be-spread	to *spread over.*	
Be-hold	to *look at.*	
Be-sprinkle	to *sprinkle all over.*	
Be-smear	to *smear all over.*	
Be-side	*at* or *on the side.*	
Be-fore	*at* or *on the front.*	
Be-siege	to *sit down before,* or *by, for attack.*	
Be-head	to *take the head off*	to decapitate, to guillotine.
Be-calm	to *make a calm*	to bring a vessel to a stop.
Be-dew	to *wet with dew*	moisten.

EN (EM before *b* or *p*), *to make.*

En-able to *make able.*
En-large to *make large.*
Em-power to *give power to.*
Em-bolden to *make bold.*

It also means *in* or *into.*

En-rol	to *put in* or *on a roll.*	
Em-balm	to *put in balm.*	
En-list	to *put into a list*	to enrol, to engage.
En-danger	to *put in danger*	to put in risk.
Em-bark	to *go into a bark* (vessel)	to enter.
Em-body	to *form into a body*	to incorporate.

FOR, *away.*

For-bid	to *bid not to do* a thing	to prohibit.
For-get	to *get* or *put away* from the memory.	
For-bear	to *bear forth* or *away*	to abstain from.
For-give	to *give away*	to remit, to pardon.
For-lorn	*gone away* or *lost*	wretched, hopeless.
For-swear	to *swear away* (from the truth)	to swear falsely.

FORE, *before* (written, also, FOR).

	Literally.	Hence.
Fore-see	to *see beforehand*	to anticipate.
Fore-warn	to *warn beforehand*	to set on one's guard.
Fore-most	*most to the front*	most advanced.
For-ward	*towards what is before.*	
Fore-tell	to *tell beforehand.*	
Fore-bode	to *bode* (tell or fear) *beforehand.*	
Fore-father	*before* our *father*	ancestor.
Fore-land	*land* running to the *front*	cape.

IM (for IN), *to make.*

Im-bitter	to *make bitter*	to grieve.
Im-pair	to *make worse* (pejor)	to hurt.
Im-poverish	to *make poor*	to exhaust.
Im-prove	to *make proof of*	to make better.

MIS, *bad, wrong.*

Mis-hap	*what happens amiss* or *badly.*	
Mis-take	*taken wrongly*	a thing wrongly understood.
Mis-conduct	*wrong conduct.*	
Mis-place	to *place wrongly.*	
Mis-manage	to *manage wrongly.*	

N, *not.*

N-ever	*not ever.*
N-ot	*no whit* or *jot.*

OUT, *beyond, above.*

Out-do	to *do beyond* another	to surpass.
Out-run	to *run beyond* another.	
Out-strip	to *go beyond* another	to outrun.
Out-live	to *live beyond* another	to survive.
Out-vie	to *go beyond in vieing with*	to surpass.

OVER, *above, beyond.*

Over-done	*too much done*	tired, overcooked.
Over-lay	to *lay over*	to smother, to cloud.
Over-charge	to *charge overmuch.*	

	Literally.	Hence.
Over-reach	to *reach over* what is right	to cheat.
Over-power	to gain *power over*	to overcome
Over-shadow	to cast a *shadow over*	to protect.

To, *this.*

To-day ..... *this day.*
To-night ..... *this night.*

Un, *not* (like the Latin In), also *the reverse.*

Un-fair ..... *not fair.*
Un-true ..... *not true.*
Un-skilled .... *not skilled.*
Un-hinge ..... to *take off the hinges.*
Un-dress ..... to *take off the dress.*
Un-deceive .... to *free from deception.*
Un-do ..... to *reverse what has been done,* to loose, to ruin.
Un-ravel ..... the *opposite of ravel* ..... to undo.
Un-ruly ..... *not submissive to rule* ..... ungovernable.

Under, *beneath.*

Under-current a *current beneath* the surface.
Under-go ..... to *go under* ..... to endure.
Under-hand .. *done* with the *hand* secretly, as if from *under.*
Under-value .. to *value under* what is correct, to depreciate.

Up, *upwards.*

Up-heave ..... to *heave up.*
Up-start ..... one who *starts up* suddenly from a lower to a higher position in life.
Up-set ..... to *set up* ..... to over set.
Up-land ..... *upper* or *high land.*
Up-right ..... *straight up* ..... honest, righteous.

With, *against, away,* or *back.*

With-stand .... to *stand against* ..... to oppose.
With-hold .... to *hold back* or *away from* .. to keep back.
With-draw .... to *draw away from* ..... to take back.

VOCABULARY.

For pronunciation and spelling lessons, and also to be learned by heart, throughout, besides being consulted for each lesson.

a-ban-don, *v.*, to leave, forsake.
A-ber-deen, *p. n.*, chief town of Aberdeenshire, Scotland; population, 100,000. On the Dee, at its mouth.
A-bra-ham, *p. n., the father of a multitude* (of nations); founder of the Jewish nation, called still in the East "The Friend" (of God). From him has come to all races the faith in the one living and true God.
A-bram, *p. n., the great father*, early name of Abraham.
a-bun-dance, *n.*, plenty that flows over, as *wave after wave.*
ac-ci-dent, *n.*, what *be* (or *by*) *-falls*, what happens, an unexpected event, a chance.
ac-com-pan-i-ment, *n.*, what goes along with.
ac-cost, *v.*, to address or speak to; lit. *to go to the side of.*
ac-cuse, *v.*, to lay a *charge against* one.
ac-cus-tomed, *p.* and *a.*, used, familiarised to.
A-chil-les, *p. n.*, a Greek hero, in "Homer," the bravest of all the Greeks at Troy (fabulous).
ac-know-ledge, *v.*, to recognise, to admit, to own.
ac-quire, *v.*, to gain something *sought.*
ac-quit, *v.*, to set free, to *set at rest.*
a-dieu, *n.*, lit. "I commend you *to God*," a farewell.
ad-dress, *v.*, to turn to, to direct to.
a-dept, *n.*, one who has reached proficiency, one skilled.
ad-join-ing, *a.*, joining to.
ad-jure, *v.*, to charge *on oath*, or very solemnly.
ad-mi-ral, *n.*, commander of a fleet.
ad-mit, *v.*, to allow, own.
A-jax, *p. n.*, a Greek at the siege of Troy, bravest of all next to Achilles (fabulous).
Al-der-shot, *p. n.*, a village in Hampshire, three miles from Farnham; a military camp now.
Am-a-zons, *p. n.*, a fabulous race of female soldiers, who *cut off the right breast*, to let them draw the bow the better.
am-bas-sa-dor, *n.*, a *messenger* sent on an *embassy* or mission between kings or states.
am-ple, *a.*, large.
a-muse, *v.*, to give something to *muse* or think of, so as to fill the time pleasantly.
An-glo-Sax-ons, *p. n.*, Saxons who came from North Germany and settled in England; first coming, A.D. 409.
An-jou, *p. n.*, an ancient province of France, to the south-west of Normandy.
an-swer, *v., to speak in reply; n.*, what is spoken in reply.
an-ta-go-nist, *n.*, one who *contends* or struggles with another.
a-part-ment, *n.*, a room *apart*, in a house, &c.
ap-pear-ance, *n.*, look, outward figure.
ap-plause, *n.*, praise by *clapping the hands.*
Arc-tic, *a.*, the extreme north, so called from the constellation of the *Great* and *Lesser*

Bear, which mark the polar skies.

ar-gu-ment, *n.*, reasoning which *makes clear*.

ar-is-toc-ra-cy, *n.*, *rule of the best*, where supreme power is held by a few nobility.

ar-mour, *n.*, ancient dress of metal or leather, &c., for defence in war.

ar-range, *v.*, to *range* in order.

ar-ti-cle, *n.*, a *small part*, anything small; lit. a small knot or joint, in the body, in plants, or in twigs.

as-cer-tain, *v.*, to find *for certain*.

as-sail-ant, *n.*, one who *leaps* or *springs on* another, that is, attacks him.

as-sur-ance, *n.*, declaration that can *be trusted*, or is *sure*.

as-ton-ish, *v.*, to cause to *stare* with wonder.

Aus-tra-li-a, *p. n.*, an immense continental island in the *southern* hemisphere; area, 3,000,000 square miles; first English settlement in it at Port Jackson in 1788.

aux-il-i-a-ries, *n. pl.*, *helpers*.

a-vail-a-ble, *a.*, that may be *turned to value*, of use, usable.

Bad-a-jos, *p. n.*, a frontier city of Spain; besieged thrice by Wellington; taken April 6, 1812, with awful slaughter.

bap-tize, *v.*, lit. *to dip into*; to baptize, by dipping or sprinkling.

Bar-ba-does, *p. n.*, a West India island 90 miles from St. Vincent; 21 miles long, 14 broad; population, 123,000.

Bar-fleur, *p. n.*, an old port of Normandy, opposite the Isle of Wight, whence William sailed to the Conquest of England.

bar-on, *n.*, lit. *a man*, a high vassal of his lord, a Norman noble.

bat-ter, *v.*, to keep beating.

Bat-tle, *p. n.*, in Sussex, a parish, and market town, population, 4,000.

bay, *n.*, a *bend* of the shore inwards.

bay-on-et, *n.*, the short spear fixed to soldiers' rifles, first made or used at Bayonne, in France.

bear, *n.*, here, the *Polar* bear, lives on the ice, preys on seals, fish &c.; white, very fierce.

be-hav-iour, *n.*, conduct, manners.

be-numb-ing, *p.* and *a.*, making *numb* or torpid.

be-seech, *v.*, to pray earnestly, to *beseek*.

be-siege, *v.*, *to sit down* before a town, in war, to take it (of an army).

be-sted, *part.* of 'bestead,' to place, to beset.

be-tray, *v.*, to *deliver up* to the enemy (by treachery).

be-wail, *v.*, to lament.

be-wil-dered, *p.* and *a.*, lost in confusion, perplexed.

bit-tern, *n.*, a wading bird, frequenting lonely pools, &c., named bittern from its *bull*-like call.

Black Coun-try, *p. n.*, district in middle and north of England, which is black and desolate from the smoke, refuse, &c., of furnaces, coal-pits, &c.

Blake, *p. n.*, a great English admiral. Born at Bridgewater, 1599; died, 1658. Fought for Parliament in the Great Rebellion, and at sea, under Cromwell's protectorate.

blast, *v.*, to *blow* violently, to blight (of lightning, sorrow, an explosion).
blight, *n.*, what withers or blasts, as insects, lightning, &c.
blis-ter, *v.*, to raise the skin in watery bubbles or puffs.
blithe-some, *a.*, cheerful, joyous.
blouse, *n.*, a French word for a smock-frock, or outer garment, of linen, for men.
blub-ber, *n.*, the fat of whales, which is loose tissue, full of *bubbles* of oil.
blun-der-buss, *n.*, a *gun*, short and wide in the barrel, holding a *number of balls*.
bo-a, *n.*, a huge serpent, so called from gliding over the *mud* or mire, or from the fable that it sucks the milk of cattle.
board, *v.*, to enter *on board* a ship by force, also peaceably.
board-ing-pike, *n.*, a pike or short spear used in boarding ships.
boat-hook, *n.*, a hook on a long handle for pulling in or pushing off boats.
bog, *n.*, a marsh, wet ground.
bomb, *n.*, a shell or cone of iron full of explosive materials, which burst it when it is fired; very deadly; (named from the sound).
boom-ing, *p.*, sounding like a *bomb* (used of the bittern, the sea, a drum, &c.)
boun-ti-ful, *a.*, full of *goodness*, open-handed.
Bourne-mouth, *p. n.*, a sea-coast town in Hampshire.
bow-sprit, *n.*, the boom or spar which *sprouts* or stands out from the *bows* or *bent* part, the front of a ship.
brag, *v.*, *to make a noise*, to boast.
branch, *n.*, *an arm* of a tree.
brawl, *n.*, a confused noise, a noisy quarrel.
brawn-y, *a.*, fleshy, muscular, like the flesh of a *boar*.
bra-zen, *a.*, of brass.
bril-liant, *a.*, shining like a *beryl* or *pearl*, sparkling, splendid
brim-stone, *n.*, *burning stone*, a name for sulphur.
brink, *n.*, edge.
Bris-tol, *p. n.*, a city of England on the Bristol Channel, in the counties of Gloucester and Somerset; population, 150,000.
broad-side, *n.*, a volley from all the guns along the whole side of a ship.
Bruns-wick, *p. n.*, formerly a German duchy, now part of German empire; population, 100,000.
buck, *n.*, lit. a *butting* animal, the male of deer, rabbits, &c.
bus-tle, *n.*, the *being very busy* or stirring.
bus-tling, *p.*, busying one's self, moving quickly.
by-stand-er, *n.*, one standing by.

cab-in, *n.*, a *hut*, a small room in a ship.
cane, *n.*, *a reed*, when stout enough, used for walking-sticks, &c.
ca-noe, *n.*, an Indian word for a boat.
cape, *n.*, a *head* or point of land running into the sea.
car-bon-ic a-cid gas, *n.*, a gas deadly to man, but the food of plants, formed naturally from volcanoes, also, as the choke-damp of coal mines, and by breathing, fermenting or putrifying.
car-go, *n.*, what a ship *carries*.
car-nal, *a.*, of *the flesh*.

car-ol-ling, *p.*, singing joy or praise, &c., like the song of a *chorus* (at a village festival) for dancing by.

car-ouse, *v.*, to drink *all out*, with noise and revelling.

car-riage-guns, *n. pl.*, cannon on gun-carriages.

cas-u-al-ty, *n.*, what *falls out*, an accident.

ca-tas-tro-phe, *n.*, *an overturning*, a sad ending.

cat-er-pil-lar, *n.*, a *peeler of the leaves*, the larva of a moth, butterfly, or other insect.

cave, *n.*, a *hollow* part in hills.

ceil-ing, *n.*, roof, as *heaven* is the roof of the world.

cen-sure, *n.*, the judgment of a *censor*, that is, one who approved or condemned as right or wrong in morals, &c., in ancient Rome; he had also to keep account of the property of citizens, hence *census*, a counting.

cen-tu-ry, *n.*, a hundred years.

cha-fer, *n.*, a kind of beetle.

chaise, *n.*, a *seated* carriage, less than a coach.

chal-lenge, *v.*, to defy, to *call* to *trial* (in battle, war, &c.)

chan-cel, *n.*, the part of a church *railed* off for the clergy.

chase-guns, *n. pl.*, cannon placed in the bows of a ship to fire while *chasing* an enemy.

chat-ter-ing, *p.*, *chatting*, or speaking very fast and indistinctly.

cher-ish, *v.*, to take care of, protect; lit. to *cheer*.

cher-ub, *n.*, a high order of angel.

chine, *n.*, a very narrow and deep cleft in the land through which a streamlet runs.

chintz, *n.*, cotton cloth, printed in *different colours*.

cho-rus, *n.*, singing in which a number take part.

ci-der-press, *n.*, press for making cider, an *intoxicating drink* made from apples.

cin-ders, *n. pl.*, remains of burned coal, &c.

cit-a-del, *n.*, lit. a *little city*, then a fortress defending a city.

clang, *v.*, to strike with a ringing sound.

clat-ter-ing, *p.*, a rattling sound continued.

cliff, *n.*, what *has been cleft*, a steep mountain side.

cli-max, *n.*, lit. *a rising as by steps, or a ladder*, the highest point reached.

clot-ted, *a.*, in clods, or lumps, (of congealed blood, of cream, &c.)

clouds, *n. pl.*, the vapour masses of the sky, which are like *hills* or *great clods*.

clo-ver, *n.*, the *cleft* plant, from its leaf, grown for pasture.

clut-ter, *n.*, *clatter*, noise.

cog-no-men, *n.*, a name *joined to the proper name*.

co-hort, *n.*, a band of soldiers, the tenth of a Roman legion, about five or six hundred men.

coil, *v.*, to wind in rings, to *gather together*.

come-ly, *a.*, becoming, fair.

com-fort-a-ble, *a.*, *strengthening*; in a state of ease of mind or body.

com-i-cal; *a.*, laughable; related to comedy, which word comes from the festivals *in villages* of old, where masks were used, songs sung, and laughter abounded.

com-mand-ment, *n.*, a law, requirement; what is given to *one's hand* to do.

com-men-ta-ry, *n.*, the thoughts

of *the mind* on anything; explanation.

com-mit, *v.*, to put into one's hands; to entrust.

com-mon-er, *n.*, one of the *common* people.

com-mu-ni-ca-tion, *n.*, what *makes* a matter or place *common* or open—as writing, intercourse, a connecting passage, &c.

com-pas-sion, *n.*, *suffering with another*, pity.

com-pel, *v.*, to *drive to*, to force.

com-pli-ment, *n.*, pleasing flattery.

com-po-si-tion, *n.*, what is put together, of literary work, &c.

con-cerned, *p.*, interested.

con-duct, *v.*, to *lead*, manage.

con-fed-e-rate, *a.*, joined by a common agreement to which each has *sworn*; *n.*, one thus joined.

con-fu-sion, *n.*, the being *poured* or *mixed together*.

con-gre-gate, *v.*, to collect together, *like a flock*.

con-nect, *v.*, to bind with, to join.

con-nec-tion, *n.*, *what binds* or unites *together*, communication.

con-se-crat-ed, *a.*, set apart as holy, *made holy*.

con-se-quence, *n.*, *what follows with* or *from* something else.

conserve, *n.*, fruits *preserved entire* in sugar.

con-sid-er-a-tion, *n.*, lit. the watching the stars together, which needs *thought*, *care*, *study* (used of those who of old watched the stars for omens, &c.)

con-ster-na-tion, *n.*, lit. a strewing over the ground (from terror), great fear.

con-sult-a-tion, *n.*, the *meeting together* for counsel.

con-tem-po-ra-ries, *n.*, *pl.*, those *living at the same time*.

con-test, *n.*, strife; from to *call to witness*, to *witness against*, as part of a trial at law.

con-tract, *v.*, *to draw together* to make an agreement; to bargain, to agree.

con-tra-ri-e-ties, *n. pl.*, contrasts, opposites.

con-ve-ni-ent, *a.*, agreeable; lit. *coming together* (with your desire or pleasure).

Cook, Captain James, *p. n.*, a great sailor. Born 1728; killed at the Sandwich Islands, 1779, on his third voyage round the world. Rose from a boy on a coal-barge to a great captain in the royal navy.

copse, *n.*, a *coppice*, or young wood where faggots may be *cut*.

corpse, *n.*, a human *body*; now, only when dead.

coun-te-nance, *n.*, face, look.

craft-y, *a.*, *strong* in *seizing* chances, cunning, scheming.

craunch, *v.*, to *craunch* or *crush* with the teeth.

cra-vat, *n.*, a neck-cloth used by the *Cravats* or *Croats*.

cred-i-ble, *a.*, that can be *believed*.

crest, *n.*, the *comb*-like growth on the head of birds, &c.; the top of a bank, &c.

crev-ice, *n.*, a crack or rent.

croak, *v.*, to make a low, hoarse sound; hence, to forbode evil.

cuck-oo, *n.*, a bird of the order of Climbers, named from its cry

cum-ber-less, *a.*, free from *incumbrance*, that is, weight or hindrance.

cur-rent, *n.*, a running stream.

cus-tom-er, *n.*, one who is *accustomed* to buy at a particular place.

cu-tic-le, *n.*, the outer skin.
cut-ter, *n.*, a light boat made to *cut* swiftly through the water.

dab-ble, *v.*, to dab over, to bespatter.
dar-ling, *n.*, a *little dear*.
dauntless, *a.*, not to be cowed or terrified.
death-ad-der, *n.*, an Australian viper.
de-bauch-ed, *a.*, *gone astray from the right*, vicious.
deck, *v.*, to *cover*, to adorn.
dec-or-a-tion, *n.*, ornament, what makes *becoming*.
ded-i-cate, *v.*, lit. to give with *open declaration*; to consecrate, to devote.
Dee. See ABERDEEN.
de-fi-ance, *n.*, the act of defying; a challenge.
del-i-cate, *a.*, *fit to be dedicated to the gods*; then frail, easily hurt, as the finest things necessarily are.
del-i-cate-ly, *adv.*, pleasantly, tenderly.
dell, *n.*, a *dale*, a narrow valley between hills.
de-moc-ra-cy, *n.*, *rule of the people*, supreme power resting in them.
de-mo-li-tion, *n.*, the act of pulling down, or bringing to a shapeless ruin.
der-vish, *n.*, a Mahometan devotee; lit. *a poor man*.
Der-went, *p. n.*, a Yorkshire river, flows sixty miles; falls into the Ouse.
de-serve, *v.*, to have a right to from *service*.
des-tine, *v.*, to intend, to make for a special end.
de-ter-mine, *v.*, to set *bounds* or *limits* to; to resolve.
dev-o-tee, *n.*, one *devoted*, or *vowed away* to the service of a god.
dex-ter-ous-ly, *adv.*, as with the right hand; skilfully.
dic-tion-ar-y, *n.*, a *word-book*.
dif-fer-ence, *n.*, contrast, distinction.
din-gle, *n.*, a slight hollow, as if made by a *blow*.
din-go, *n.*, Australian wild dog, like a wolf, and fierce.
dis-close, *v.*, to show, reveal.
dis-en-gage, *v.*, to make clear from, disentangle.
dis-grace, *n.*, shame, *the being out of favour or grace*.
dis-hon-es-ty, *n.*, theft.
dis-lodge, *v.*, to force out of a spot; to lodge is lit. to set *in a bower*; then to fix, to settle.
dis-mal, *a.*, dreary, sad.
dis-miss, *v.*, to *send away*.
dis-miss-al, *n.*, the *sending away*.
dis-play, *v.*, to *unfold*, to show.
dis-so-lute, *a.*, *loose* in morals; profligate.
dis-tinc-tion, *n.*, that which *marks*, and thus sets apart; rank, honour, badge.
dis-tri-bute, *v.*, to *divide among*.
dis-trust-ful, *a.*, suspicious.
dis-turb-ance, *n.*, agitation; the confusion as of a *crowd scattered*.
dit-ty, *n.*, lit. a *saying*; a little poem.
di-verse, *a.*, *various*.
do-cil-i-ty, *n*, *teachableness*.
do-mes-tic, *n.*, servant, *belonging to a house*.
downs, *n., pl.*, high, rolling land like *hills*; upland pastures.
drag, *n.*, that which we *draw* along the bottom to catch on anything desired to be brought up.
drift, *v.*, to *drive* (before wind or current).
drone, *n.*, the male bee in common hives, *which lives in idle-*

ness; so called from its *humming;* an idle fellow.

dry-salt-er-y, *n.*, place where *dried* or salted meat is sold, or pickles, gums, dyes, &c.

duck-weed, *n.*, a very small-leaved floating plant; often covers our ponds and ditches.

dump-ling, *n.*, a *dumpy*, round solid pudding.

Dun-keld, *p. n.*, a town fourteen miles from Perth, Scotland; population, 3,000.

du-ra-tion, *n.*, *continuance*, from being so *hardened* as not to feel the effects of time.

ea-ger-ly, *adv.*, keenly, earnestly.

ear-nest, *a.*, serious, zealous.

earth-quake, *n.*, a quaking of the earth.

eaves, *n.*, the projecting edge of a sloping roof

Ed-in-burgh, *p. n.*, capital of Scotland; population, 225,000.

Ed-ward the Con-fes-sor, *p n.*, died A.D. 1066, called Confessor from his religiousness; founded Westminster Abbey; tomb in do.

e-lude, *v.*, to escape from *by trick.*

elves, *n. pl.* of elf, a *fairy* or dwarf.

em-blem, *n.*, type, image, picture.

e-merge, *v.*, to *rise out of.*

em-ploy-ment, *n.*, occupation, work.

en-camp, *v.*, to pitch a camp.

en-cour-age, *v.*, to raise *the courage* of, to animate, to cheer.

en-du-rance, *n.*, lit. *lasting out;* a bearing without shrinking.

en-er-gy, *n.*, power *working in* one.

en-list, *v.*, to put on a *list;* to enrol.

en-rap-tur-ed, *p.* and *a.*, *carried away* with joy, transported with joy,

en-shrine, *v.*, to put in a *shrine* or sacred casket or coffer (for jewels, writings, sacred relics).

en-sign, *n.*, the *distinctive* flag or badge, as of a country, a regiment, &c.

en-tan-gle, *v.*, to snare in a *tangle.*

en-ter-prize, *n.*, *anything undertaken.*

en-tic-ing, *a.*, attractive; having qualities which entice.

e-qua-tor, *n.*, an imaginary circle round the earth's centre, dividing it into *two equal parts*, or hemispheres, that is, half-spheres, or globes.

er-mine, *n.*, white fur of a creature of the *weasel* kind, found in northern Europe.

e-rup-tion, *n.*, a *breaking out* (of a burning mountain)

es-cape, *v.*, to flee away.

Es-qui-maux, *p. n.*, people of the American polar regions, of the Asiatic Tartar family.

es-tab-lish, *v.*, to make *stable*, to fix, to settle.

e-ter-nal-ly, *adv.*, for ever.

Et-na, Mount, *p. n.*, a volcano in Sicily, 11,000 feet high, sixty-three miles round at its foot.

Eu-ro-pe-an, *a.*, belonging to Europe.

ex-act-ly, *adv.*, *forced out* so as to fit; precisely, carefully.

ex-claim, *v.*, to *cry out.*

ex-er-cise, *v.*, to use, to task.

ex-ile, *n.*, a *banished one*, with or against his own will.

ex-pe-di-tion, *n.*, a body of men sent out on a special journey or voyage; lit. men who have *cleared their feet* from hindrances and can go on an errand quickly.

ex-pel, *v.*, to *drive out*, to put away.
ex-pen-ses, *n.*, what we *expend* or lay out; lit. *weigh out.*
ex-plain, *v.*, to make *plain.*
ex-ten-sive, *a.*, *stretching out*, wide, of great extent.
ex-tract, *v.*, to draw out.
ex-ult-ing-ly, *adv.*, triumphantly; rejoicingly, so as to *leap* for joy.

fac-tion, *v.*, a party in opposition to another.
Fa-keer, *p. n.*, *a poor man;* an Indian devotee.
fa-mi-li-ar, *a.*, well-known; lit. *belonging to the family.*
fang, *n.*, lit., *that which seizes;* the poison-teeth of snakes; long teeth.
Farn-bor-ough, *p. n.*, a Hampshire parish.
fas-ci-nate, *v.*, to get under absolute control (by the eye, by false praise, by spells, &c.)
fast-ness, *n.*, stronghold.
feign-ed, *a.*, pretended.
fell, *n.*, a rocky hill.
fer-ret, *n.*, a creature of the weasel kind, used to *seek out* rabbits from their burrows.
fer-vour, *n.*, warmth.
fib, *n.*, a soft word for lying.
fib-bing, *p.* and *a.*, telling *fables.*
fid-get, *v.*, to be restless.
fist-i-cuffs, *n. pl.*, a fight with the fists.
flab-by, *a.*, *flappy*, loose, without substance, soft.
flag, *n.*, the yellow iris, a wild plant of the family to which the crocus and gladiolus belong.
Flan-ders, *p. n.*, now part of Belgium; pop., 1,500,000.
flat-ter-y, *n.*, soft, deceiving praise.
flick-er, *v.*, to flutter like a bird's wings; waver; move like an unsteady flame.
flight, *n.*, the act of *flying.*
flint, *n.*, lit., *arrow-stone*, because anciently used for arrow-heads; the very hard stones found in chalk, formed always round some speck of sponge, shell, &c., as a centre.
flit-ting, *p.* and *a.*, swiftly moving (*fleeting*).
floe, *n.*, a large mass of ice *floating* on the sea.
flut-ter-ing, *p.* and *n.*, flapping the wings quickly, but not in flying.
form, *n.*, a seat, a bench; what *bears* one.
for-mi-da-ble, *a.*, fitted to cause *fear.*
for-ti-fi-ca-tion, *n.*, a *place made strong*, a castle.
fos-sil, *n.*, lit., a *thing dug up* turned to stone (of the remains of plants and living creatures).
found-er, *v.*, *to go to the bottom.*
fringe, *n.*, border of loose hanging threads.
frisk-er, *n.*, one who goes lightly, easily, *freshly.*
Frith of Forth, *p. n.*, the arm of the sea between Fife and the Lothians; the Forth falls into it.
fu-ri-ous-ly, *adv.*, madly, *full of fury.*
fur-row, *n.*, the ridge made by the plough, from the plough being compared to a *rooting-up* creature like a *sow.*
furze, *n.*, the whin or gorse.

gale, *n.*, a strong breeze.
gal-ley, *n.*, a vessel on which both sails and oars are used; still used in some parts; once universally used.

gang-way, *n.*, *going way;* the part of a ship's deck to go in or out at.

gar-land, *v.*, to wreathe with flowers.

ge-ner-ic, *a.*, *of a genus* or large division of plants or animals.

gen-er-os-i-ty, *n.*, open-heartedness, *nobleness* of disposition.

Georg-i-a, *p. n.*, one of the old colonies of England, in America; now one of the United States; population, about a million, one third of them black; nearly one-fifth larger than England.

Ger-man-y, *p. n.*, formerly a mob of separate states, now a great empire in Europe; head, the king of Prussia; pop. 41,000,000.

ghast-ly, *a*, like a *ghost*.

gild, *v.*, to cover with a thin coating of gold.

gla-cier, *n.*, a great ice-river.

glen, *n.*, a narrow vale through which a stream *runs* or *ran*.

glimpse, *n.*, a *gleam*, a passing view.

gloam-ing, *n.*, twilight.

gnaw, *v.*, to *bite with a noise of the teeth;* to bite off by degrees.

gor-geous, *a.*, splendid (as if adorned with a *gorget* armour or noble dress for the gorge or throat and breasts).

Goths, *p. n. pl.*, an ancient German people.

grass-hop-per, *n.*, an insect of the cricket family; its long hind legs enable it to *hop* great lengths over the *grass*.

grat-i-tude, *n.*, the feeling of gratefulness or thankfulness.

Great Yar-mouth or Yarmouth, *p. n.*, seaport in Norfolk; population, 30,000.

Green-land, *p. n.*, a very cold country of N. E. America, under perpetual snow, except in some southern valleys, which were *green* when first discovered; it is Danish.

hand-ker-chief, *n.*, a kerchief is literally a square of cloth to *cover the head;* a *hand* kerchief is one used by the hand.

hand-some, *a.*, beautiful; lit. what *fills the hands* (as a generous gift), then what pleases us.

hang-er, *n.*, a short broad-sword, bent at the point.

Han-o-ver, *p. n.*, capital of former kingdom of Hanover, now part of German empire; pop. 45,000.

har-bour, *n.*, lit. a *safe place for an army;* any refuge for ships, &c.

Har-old, *p. n.*, second son of Godwin, Earl of Kent; was about seventy when killed in A.D. 1066.

har-row, *v.*, to break up the clods with a great square or three-cornered horse-rake, with iron teeth; to tear up in any similar way.

hatch-et, *n.*, a small axe for *hacking*.

Ha-wa-ii, *p. n.*, the largest of the Sandwich Islands, formerly Owyhee; Captain Cook killed here 1779.

health-y, *a.*, in health, that is, being *whole;* whence, *holy*.

hearth-rug, *n.*, a large (rough) mat laid before the *hearth*, or *earth* on which the fire was laid.

heath-er, *n.*, *heath*.

hel-met, *n.*, a *covering*, or armour, for the head.

Hen-ry I., *p.n.*, son of William the Conqueror, called Beauclerk, or the Scholar, born at Selby, Yorkshire, 1068, died at Rouen, 1135.

her-ald, *n.*, lit. *the shouter;* one who proclaims; a forerunner

Her-cu-les, *p. n.*, a fabulous hero, said to be the son of Jupiter, with a woman for mother; the god of strength.

hes-i-tate, *v.*, to *stick fast;* to doubt; to waver, be undecided.

High-lands, *p. n. pl.*, central part (*mountainous*) of Scotland —*high land.*

"**hiss-ing light**," the aurora borealis (*northern dawn*), called also northern lights; great magnetic lights which shoot up the heavens, brightest in the north.

hock-ey, *n.*, a game at ball played with a *hooked* stick.

hoist, *v.*, to *raise;* to run up a flag, sail, &c.

hol-i-days, *n. pl.*, *holy days*, on which no work was done.

hol-low, *a.*, where there is a *hole; n.*, a sunk place.

home-stead, *n.*, *place* where one's *home* is; the farmer's fields round his house.

hon-our-a-ble, *a.*, giving *honour.*

hull, *n.*, the *outer shell*, of a ship, &c.

hum-bly, *adv.*, lit. *on the ground;* lowly.

Hun-stan-ton, *p. n.*, a village in Norfolk; population, 500; on the coast of the Wash.

hurl, *v.*, to *whirl*, to throw violently.

hust-ling, *p.*, pushing against each other.

hut, *n.*, a place in which you can *hide;* a shelter; a small poor makeshift for a dwelling.

hy-poc-ri-sy, *n.*, lit. *playing a part on the stage*, and hence, *playing a part* not your own; deceit.

ice-berg, *n.*, a mountain or *berg* of ice.

Ice King, *n.*, a poetical name for winter.

Ice-land, *p. n.*, a Danish island in arctic circle; 300 miles from east to west, 210 from north to south; full of volcanoes; population, 60,000; has never been fully explored.

i-dol, *n.*, image; likeness by *which we as it were see the reality;* the image of a god.

ig-no-rance, *n.*, the *being without knowledge.*

ill-tem-per-ed, *a.*, fretful, quarrelsome.

il-lus-trate, *v.*, *to throw light upon;* to display; to show clearly.

im-me-di-ate-ly, *adv.*, *with nothing between;* directly.

im-port-ance, *n.*, a weight, a consequence.

im-pres-sion, *n.*, what is *pressed* or *printed* into, as the mind —or *printed from*, as a page from type.

in-ces-sant, *a.*, *unceasing.*

in-ci-dent, *n.*, *what falls into* one's way; an event.

in-cred-i-bly, *adv.*, *beyond belief.*

in-cred-u-lous, *a.*, unwilling to believe.

In-di-a, *p.n.*, a great country in Asia, governed by England; 1,900 miles from north to south, 1,500 from east to west; *twenty-seven times as large as England, with Wales;* pop., 240,000,000.

in-di-cate, *v.*, to *point out*, as an *index.*

in-dig-na-tion, *n.*, anger *at something unworthy.*

in-dulge, *v.*, to give way to, to allow.

in-dus-tri-ous, *a.*, busy; opposite of idle.

in-fan-cy, *n.*, *the being too young to speak.*
in-fect, *v.*, to disturb, trouble.
in-firm-i-ty, *n.*, weakness; the not being *firm* or strong.
in-flict, *v.*, lit. to *strike on;* to impose punishment.
in-form-er, *n.*, one who informs against others for some breach of law.
in-hab-it, *v.*, to live in.
in-no-cent-ly, *adv.*, blamelessly.
in-qui-ry, *n.*, the *seeking into* a matter.
in-spire, *v.*, to *breathe into;* to cause.
in-stinct, *n.*, what *moves* the creatures to act as they do; their *reason.*
in-struct, *v.*, to lay or set one on another; to teach, which is a *building up* of knowledge; to *set in order;* to inform.
in-tel-li-gence, *n.*, news (what we learn by being able to *choose,* or decide between, or upon what we hear), ability.
in-trust, *v.*, to trust with.
in-va-ri-a-bly, *adv.*, *without varying*, constantly.
i-ron-bound, *a.*, coast *lined* or *bounded* by *iron-like* rocks.
is-land, *n.*, an *eye* of land in the midst of water; land surrounded by water.
I-tal-ian-iron (used as a verb), to make a frill into round waves by an *Italian* iron.

Jack-daw, *n.*, a smaller species of bird of the crow kind.
jag-ged, *a.*, *cleft*, notched.
Ja-va, *p. n.*, an island in the Eastern Archipelago; Dutch; 630 miles long, 35 to 126 miles broad; has twelve active volcanoes; climate very hot; population, 8,500,000.
jeal-ous, *a.*, lit. *zealous;* suspicious.
Je-ru-sa-lem, *p. n.* (*the city of peace*), capital of Palestine; population now, about 15,000.
jest, *n.*, a joke, fun; an *act.*
jet, *n.*, *what is thrown*, as a spout of water, &c.
jew-el, *n.*, a *joy;* a precious thing.
job-bing, *p.*, striking or stabbing suddenly; from the Gaelic word for *a beak.*
judg-ment, *n.*, the declaring what is *just* in *law*, sentence.
Ju-li-us Cæ-sar, *p.n.*, born B. C., 100; murdered by the Roman nobles in the senate-house at Rome, B.C. 43; dictator of Rome.
jum-ble, *v.*, to mix together.
just-ling, *n.*, *coming against*, of persons pushing against each other.
ju-ven-ile, *a.*, of or belonging to *the young.*

kan-ga-roo, *n.*, an Australian quadruped, with a pouch for its young; very long hind and very short fore-legs; cannot run, but leaps as fast as a horse can follow—belongs to the order of Marsupials.
kid-nap-per, *n.*, one who steals a *kid* or child; a man-stealer.
king-fish-er, *n.*, a little bird with *king-like* plumage, which feeds on the fish of ponds and rivers.
knight, *n.*, a youth, a *servant;* a military dignity conferred in the Middle Ages on the youths of noble families.
knoll, *n.*, a *knob* or mound of rising ground.

lab-or-a-tor-y, *n.*, lit. *place to labour in;* a chemist's workroom.

Lab-ra-dor, *p. n.* (*golden coast*), a bleak region of the Dominion of Canada; three times as large as England; north of the St. Lawrence; on the Atlantic

la-bur-num, *n.*, a graceful low-growing tree, with drooping flowers.

land-lord, *n.*, a lord or owner of land or houses.

lar-der, *n.*, where *lard* is kept, meat room.

lark, *n.*, a joke (a slang word).

laugh-ing-jack-ass, *n.*, the giant kingfisher, so called from its strange cry; length, 18 inches; Australian.

laun-dry-wo-man, *n.*, a *washer-woman.*

la-va, *n.*, the fiery stream which *laves* volcanoes in eruptions.

lawn, *n.*, grassy space before mansions.

lea, *n.*, land *laid out* in grass; fallow or unsown land.

league, *v.*, to make a *bond* or treaty.

ledge, *n.*, small moulding against which a window shuts; a shelf; that on which anything can *lie.*

leg-a-cy, *n.*, *what is left one by will.*

lep-ro-sy, *n.*, the *scalv* disease, because the skin falls off in scales. Common from Bible times in Asia; once common in Europe, after the crusades; leper houses abounded in Britain; Robert Bruce died of leprosy, A.D. 1309; now found in Europe only in Norway and Spain.

li-chen or litch-en, *n.*, an humble kind of plant found on rocks and trees.

liege, *n.*, a lord to whom one is *bound* to render services, as subjects to a king.

li-lac, *n.*, a well-known flowering shrub, first from Persia.

lime-stone, *n.* (*gluing* or *slimy* stone), stone used to build walls together; prepared by burning.

lin-ger, *v.*, to be *long* in a state or place.

lit-er-ar-y, *a.*, belonging to *literature* or *letters.*

lit-ter, *v.*, to strew in confusion, as straw for a *bed.*

loon, *n.*, a clown, a rude person, a rogue; often used without any injurious sense.

lop-ears, *n. pl.*, ears *looped* or folded over and hanging down.

Lo-thi-ans, *n. pl.*, the counties of Edinburgh (Mid. L.), Haddington (East L.), and Linlithgow (West. L.).

lurk-ing-place, *n.*, a hiding-place; *where one lies* in wait.

Ma-deir-a, *p. n.*, Portuguese island, off N. W. Africa; one of a small group; 30 miles long, 12 broad; all mountains; pop., 120,000; capital, Funchal.

mag-a-zine, *n.*, a *storehouse.*

mag-ic, *n.*, the science of the Magi, or ancient philosophers of Persia; sorcery, tricks, or wonders of the black art.

mag-ne-si-a, *n.*, a white earth, thought of old to act like a *magnet.*

main-shrouds, *n.*, the rigging which holds the main-mast—its *clothing.*

mal-ice, *n.*, *badness;* spite, ill-will.

man-of-war, *n.*, a ship of war.

man-ure, *n.*, lit. what enriches the soil, as *working it with the hand does.*

man-u-script, *n.*, what is *written with the hand.*

mar-i-ner, *n.*, one belonging to the *sea;* a sailor.
mar-tyr, *n.*, a *witness* for the truth by dying for it.
mas-sa-cre, *n.*, a *butchering*—killing without distinction, with cruelty and violence.
mat-in, *n.*, morning prayers, &c.
Mat-ter-horn, *p. n.*, a high mountain in the Swiss Alps.
May-ing, *p.*, gathering *May*, or hawthorn, which blossoms in May.
May-Queen, *n.*, a girl crowned with May (hawthorn) as Queen of May.
mel-an-chol-y, *a.*, being sad by *black bile;* gloomy, causing sadness.
men-ac-ing-ly, *adv.*, threateningly.
mer-chant, *n.*, a *trader* (on a large scale).
mer-chant-man, *n.*, a ship employed in trade.
mes-mer-ise, *v.*, to throw into a nervous sleep, in which the will is under the control of the mesmeriser, from *Mesmer*, a German physician (1733—1815).
mes-sage, *n.*, any word *sent.*
me-te-or, *n.*, lit. *something in* or *beyond the air;* a passing fiery, dazzling body in the sky.
mil-i-tant, *a.*, fighting; *serving as a soldier.*
mim-ic, *a.*, mock.
mir-ac-u-lous, *a.*, done by supernatural power.
mis-chiev-ous, *a.*, hurtful, ill-disposed.
mis-judge, *v.*, to judge wrongly, or amiss.
mis-take, *n.*, the *taking wrongly;* error.
mo-lest, *v.*, to *trouble.*
mope, *v.*, to be out of spirits, sad, dull.
mo-raine, *n.*, line of stones and gravel marking the foot of present or former glaciers.
mor-ti-fy, *v.*, lit. to *cause death;* to humble, to irritate.
mould, *v.*, to form on a mould or *model;* *n.*, the hollow form into which metal, &c., is poured to make the thing thus *modelled.*
munch, *v.*, to *chew* with the lips closed.
mus-ter, *n.*, a gathering; lit. *showing* the presence of.
mys-te-ri-ous, *a.*, what is *secret*, closed from knowledge; at first, of a secret in holy things, hidden from all but the initiated.

nap-ping, *v.*, *part.* of "nap," to *nod.*
na-tive oak, *n.*, a name for ships of war, because built of British oak.
nat-u-ral his-tor-y, now strictly the description, &c., of living creatures; it formerly embraced the study and description of all things in nature.
naugh-ty, *a.*, of *no value;* bad.
nec-es-sar-y, *a.*, needful.
Ne-gro sla-ver-y, abolished in British Empire 1833 and 1834, at a cost of £20,000,000 to Britain.
neigh-bour-ing, *a.*, near.
New South Wales, former name for all Australia, now that of one colony in it; pop., 400,000.
night-in-gale, *n.*, a small bird that *sings at night.*
Nim-rod, *n.*, *the hero*, named in Genesis; still in the East the name for an awful, God-hating being, once a great king.
Nor-man-dy, *p. n.*, an old province of France, conquered by

the *Normans*, in the ninth century; lies on the English Channel.

Nor-mans, *n. pl.*, *Northmen*, originally from the Baltic.

nor-thern lights, see Aurora.

Nor-thum-ber-land, *p. n.*, a great border county of England; capital, Newcastle-on-Tyne.

Nor-way, *p. n.*, a country in the north of Europe; a long peninsula with Sweden; population 1,500,000.

Nor-we-gi-an, *a.*, belonging to Norway.

nun-cheon, *n.*, a luncheon, a noonday light meal.

nur-ser-y, *n.*, children's room.

o-be-di-ent, *a.*, dutiful, submissive to command.

ob-liged (to be), *pass. v.*, to be forced; to be *bound*.

ob-long, *a.*, longer than broad.

ob-scure, *a.*, *covered over*, dark.

ob-stin-ate-ly, *adv.*, *standing in the way* unyieldingly.

ob-tain, *v.*, to *get hold of*, to secure, to gain.

o-dour, *n.*, smell.

ol-ive-yard, *n.*, an olive, or *oil*-tree orchard; the olive is a small evergreen tree with dull leaves: grows in the south of Europe, in Palestine, &c.

on-slaught, *n.*, an onset to *slaughter*, attack.

op-er-a-tor, *n.*, a *worker*; one who does anything in art or science.

op-po-site, *a.*, *placed over against*.

op-po-si-tion, *n.*, standing *opposite to*; the opposing.

orch-ard, *n.*, a *yard* originally for *worts*, or vegetables, now for fruit-trees.

o-rig-i-nal, *a.*, not copied; of a special character.

o-ver-whelm, *v.*, to *whelm* or *cover over completely*; to crush or sink beneath.

pac-if-ic, *a.*, *peace-making*, gentle.

pal-an-keen, *n.*, a covered conveyance, borne on men's shoulders, for one person; Indian word.

palm, *n.*, a kind of tropical tree of many varieties, as the cocoa, the date, the sago-tree.

pant-ry, *n.*, a closet *for the bread*; a place for provisions.

Par-a-dise, *n.*, the *gardens round a king's palace*; a delightful place.

par-a-sol, *n.*, that which *wards off the sun*; a small umbrella.

par-don-a-ble, *a.*, that may be pardoned.

par-tic-u-lar, *a.*, special (from the Latin for *a small part*).

pat, *v.*, to tap gently in goodwill.

pat-ri-cian, *a.*, belonging to patricians; *n.*, one of noble birth, descended from the *fathers* of the nation.

pat-ter-ing, *p.*, patting or striking lightly and often, as by small feet or hail.

paunch, *n.*, the belly.

pearl, *n.*, anything precious; a gem found in oyster and other shells, in which it is a diseased growth.

peat-y, *a.*, full of *peat*: the dead matted fibres of water mosses, &c., growing in hollows of bogs, marshes, &c., the growth of each year springing from the tips of that of the year before, till the whole is often very thick; used for fuel in Ireland and in the Scottish Highlands.

per-mit, *v.*, to allow, to *let* (go) *through with*.

per-sev-e-rance, *n.*, the act or state of persevering; firmness.
pet, *n.*, any *little* living thing made much of.
Pe-ter's pence, an annual gift of a silver penny from the faithful, for the Pope, as the successor of St. Peter; at first free, afterwards claimed; a subject of much bitter feeling on both sides, till its legal collection was abolished by Henry VIII.
pho-to-graph, *n.*, a picture *written* (made) *by the light.*
phys-i-cal, *a.*, *natural.*
pick-et, *n.*, a small number of soldiers *pitched* on the outposts of a camp.
pike, *n.*, a voracious fish, with a *pointed snout.*
pil-lage, *v.*, to *peel* or strip bare; to plunder.
pin-cers, *n.*, *pinchers;* an instrument for drawing out nails, &c.
pin-na-cle, *n.*, top of a mountain, building, &c., *pointed like a pin or feather.*
pit-ted, *v. part.*, set up against, as beasts or cocks, in a pit where they have to fight.
plod-der, *n.*, one who walks heavily, a dull steady toiler.
plough-share, *n.*, the part of the plough which *shears* or cuts the soil.
pluck-y, *a.*, brave.
poach-er, *n.*, one who *pokes* or thrusts himself into preserves, after game, contrary to law.
poi-son, *v.*, to kill or injure by *poison*, which means lit. a *potion*, what is *drunk.*
pole, *n.*, the imaginary axis on which the earth revolves.
pole-axe, *n.*, an *axe* on a long *pole*, a weapon for boarding ships, &c.
pol-ite, *a.*, *polished*, courteous.
pol-lard, *n.*, a tree *polled* or cut short and round as a *ball.*
pop-u-lar-ly, *adv.*, *to the people's taste.*
po-rous, *a.*, full of *pores* or small passages.
port, *n.*, a harbour, as a place *to* and *from* which cargoes are *carried.*
port-al, *n.*, a *gate.*
pos-i-tive, *a.*, exact, so that it can *be laid down* clearly.
pot-ash, *n.*, an *alkali* got from boiling *ashes* of wood in *pots.*
Po-tō-mac, *p. n.*, a river dividing Maryland from Virginia, United States; length, 400 miles; falls into Chesapeake Bay.
pour-sui-vant, *n.*, a state messenger; lit. one who *follows* or *pursues*, a herald's officer.
prance, *v.*, to spring and bound on its course (as a horse), to make a horse go thus.
pre-ca-ri-ous, *a.*, uncertain, because dependent *on the will or pleasure of another.*
pre-cincts, *n. pl.*, the bounds which *gird off* any place.
pre-cise-ly, *adv.*, lit. *cut off exactly;* exactly.
pre-da-cious, *a.*, *living on prey.*
pre-dom-i-nant, *a.*, *ruling over;* of greatest weight.
prej-u-dice, *n.*, an opinion or judgment *beforehand*, for or against.
press, *v.*, to urge.
press-gang, *n.*, a gang of sailors who pressed or forced men to join the navy; now disused, but not illegal.
prig, *v.*, to steal.
priv-a-teer, *n.*, a *private* ship commissioned to act as a ship of war.
pro-fes-sion, *n.*, declaration, *what one speaks publicly.*

pro-trude, *v.*, to *thrust forward* or out.
prow, *n.*, the *forepart* of a ship; the bows or cutwater.
psal-ter-y, *n.*, a *twanging* or *stringed* instrument (Jewish).
pud-dle, *v.*, to stop up with clay, so that water will not pass through.
pum-ice-stone, *n.*, that which a volcano *spits out;* a light spongy stone.
pump, *v.*, to raise water by a pump.
punch-eon, *n.*, a *cask* containing 84 gallons.
pu-pil, *n.*, a *little boy* or *girl;* one, as such, under a teacher.
pur-pose, *n.*, what *one sets before himself* to do.
pur-sue, *v.*, to *follow after;* to chase.
puz-zle, *v.*, to *pose,* to perplex, that is, *to weave or plait* (one's ideas) *one through another,* so as to confuse them.
Pyr-e-nees, *p. n.*, mountain chain between France and Spain.
py-thon, *n.*, a huge serpent, so called from a fabulous serpent of monstrous size in antiquity.

quad-ru-ped, *n.*, a *four-footed* animal.
quaff, *v.*, to *drink from a cup.*
quag-mire, *n.*, a *mire* that *quakes* or shakes.
quail, *n.*, a bird of the partridge kind, named from its *cry.*
qual-i-fi-ca-tion, *n.*, what qualifies, or *makes equal for* a post or task.
quell, *v.*, lit. *to kill;* to subdue.
quench, *v.*, to extinguish.
quip, *n.*, jest, joke.
Qui-to, *p. n.*, capital of republic of Ecuador, South America; pop., 78,000; 9,500 feet above the level of the sea; eleven snowy mountains seen from it; in the Andes.

rab-bi, *n.*, lit. *my master,* a Jewish master of the law.
ral-ly, *v.*, to gather again, to recover order.
ramps, *n.*, *creeping* plants.
ra-pid-i-ty, *n.*, swiftness.
ras-cal, *n.*, a bad character.
ra-tion-al, *a.*, having *reason,* sensible.
raunch-man, *n.*, corrupt Spanish word for a *herdsman* at a cattle farm in California, Mexico, &c.
rav-en, *n.* (the *plunderer,* the robber), a large kind of crow, lives on all creatures weaker than itself.
rav-ing, *p.*, mad or *rabid,* out of one's mind.
reb-el, *v.*, *making war against* (the king or the laws); *n.*, one doing so.
re-bel-lious, *a.*, acting as a *rebel* (see REBEL).
rec-i-pe, *n.*, lit. *take* (of doctor's medicines); the ingredients of which anything is composed.
re-col-lect, *v.*, to *gather up again* (into the memory), to remember.
rec-om-pense, *v.*, to *weigh out in return,* to reward, to repay.
re-count, *v.*, to *count* or *tell over* again.
re-cov-er, *v.*, to *take* or *obtain* again.
re-deem-ing, *v.*, *buying back,* from disrepute; atoning.
red stream-ers, the red beams of the dawn.
re-fuse, *v.*, not to comply, not to agree to do.
reg-i-ment, *n.*, *regimen* or rule; a body of men under rule (as soldiers).

re-in-force-ment, *n.*, additional *force* or help.
re-joice, *v.*, to *feel joy again and again.*
rel-ic, *n.*, a thing *left by* or *of* anyone; a memorial.
re-mark-a-ble, *a.*, worthy of being *specially marked* or noted.
re-morse, *n.*, the *gnawing again* of the conscience; the agony of guilt.
re-nown, *n.*, of great *name.*
rep-re-sent, *v.*, to *make present again;* to be the image of.
rep-ro-bate, *v.*, to reject, to cast off as unworthy (used also as *n.* and *a.*).
rep-tile, *n.*, a *creeping* creature (as a snake).
re-pul-sive, *a.*, *tending to drive one off;* revolting.
re-quest, *v.*, to ask.
res-cue, *n.*, the act of freeing, or *shaking off* hindrances to liberty or safety.
res-i-dence, *n.*, a place in which you are free to *sit down* and *rest;* a dwelling.
re-sound, *v.*, *to sound back again.*
res-pite, *n.*, lit. a *looking back*, as if to reconsider; hence delay, rest, ease, &c., for a time.
ret-i-cule, *n.*, a *little net-work bag;* a lady's hand-bag.
ret-i-nue, *n.*, the *retainers* or train of dependants who follow a person of rank.
re-tire, *v.*, to *draw off again.*
Rev-o-lu-tion, *n.*, lit. a *rolling back;* a great change in government. The great French Revolution began 1789; Louis XVI. beheaded, Jan. 21, 1793; turned into the rule of Napoleon, Nov. 9, 1799; its better principles are still at work freeing the nations.
re-ward, *v.*, to give *guerdon* or recompense to.
rig-ging, *n.*, the *dress*, tackling, cordage, &c., of a ship.
rip-ple, *n.*, the little wave on nearly calm water.
riv-u-let, *n.*, a *small river.*
rock, *n.*, a name for hard, *rocky*-like sweets.
ro-dent, *n.*, *gnawer;* one of the Rodentia (rats, hares, &c.); animals with two long *gnawing* teeth in the front of each jaw.
rogue, *n.*, a *proud* man; one who is *above working;* a vagrant; a mischievous person; a term of endearment.
Rou-en, *p. n.*, capital of Normandy; population, 100,000.
rov-er, *n.*, rambler; lit. a *robber* (who wanders about).
rue, *v.*, to be sorry for, to lament.
rue-ful, *a.*, full of *woe* or sorrow.
rug-ged, *a.*, *rough.*
rum-bling, *n.*, sound of a heavy rolling body.
runs, *n. pl.*, tracks over which one's flocks *run* in Australia.
rus-tic, *a.*, of the country.
rus-tle, *n.*, a *soft whispering sound*, as of dry leaves, straw, silk, &c.
rut, *n.*, the deep track made by wheels in a road.

St. Law-rence, a great North American river, 1,800 miles long, the outlet of the great Lakes into the Atlantic.
St. Vin-cent, a West Indian island; population, 30,000; ten or twelve miles across.
sal-ute, *v.*, *to wish health to;* to greet, to honour.
Sand-wich Is-lands, *p. n.*, in the North Pacific, eleven in number; pop., about 52,000;

discovered by Captain Cook, 1778.

sat-in, *n.*, a rich shining silk cloth.

Sat-urn or Sa-turn, *p. n.*, the father of the gods, son of Heaven and Earth, who devoured his sons as soon as they were born; a name with the old poets for Time, of which this is sadly true.

sauce, *n.*, lit. *what is salted;* liquid seasoning for food.

saun-ter, *v.*, orig. to make a pilgrimage to *the holy land* (sainte terre); to walk leisurely.

Sa-van-nah, *p. n.*, a city and port of Georgia, United States, on river of same name; pop., 30,000.

sax-i-frage, *n.*, a small rock plant, thought to have the power of *breaking*, or dissolving the rock.

school of the law, school of a Jewish rabbi.

sci-ence, *n.*, *knowledge.*

scis-sors, *n.*, *cutters;* two blades cutting as they close.

scoop, *v.*, to hollow out as with a *shovel.*

scorch, *v.*, lit. to *make the bark come off;* to singe, to burn slightly.

scor-pi-on, *n.*, a poisonous insect found in most warm climates, allied to the spider, but of a lobster-like form.

Scot-land, *p. n.*, northern part of this island; half the size of England with Wales; population, about three millions.

Scott, Sir W., *p. n.*, a great novelist, a poet and an historian; one of the greatest of Scotchmen.

scram-bling, *part.*, climbing by repeated *clutching by the hands.*

scrape, *n.*, a difficulty in which we *scrape against* what is painful or unpleasant.

scrib-ble, *v.*, to *write* fast and carelessly.

seal, *n.*, a sea-beast breathing by lungs and nursing its young, with paddles for arms, &c.

se-cre-cy, *n.*, the keeping secret or concealed; the *putting by itself* out of view.

sen-si-ble, *a.*, able to feel or see by the senses; intelligent; wise.

sen-try, *n.*, a sentinel; a soldier on guard.

se-vere-ly, *ad.*, harshly; the opposite of mildly.

shal-low, *n.*, *shoal* water, with a shelf of rock or bank of sand for bottom; *a.*, not deep.

sham-poo, *v.*, to wash thoroughly, lit. with *squeezing* and rubbing of the body.

sharps and flats, sharp and flat notes in music.

shat-ter, *v.*, to break in pieces.

sheen, *a.*, *shining.*

sheer, *v.*, to *cut into* an opposite way, to sail off.

shell, *n.*, what is like a *scale;* the covering of Mollusks; hollow ball or cone filled with powder, which bursts on firing.

shorn, *p. part.* of "to shear" or shave.

shot, *v.*, to put *shot* into a gun or cannon.

shrank, *perf. t.* of *v.* "to shrink," to *draw together.*

shrub-ber-y, *n.*, a place planted with shrubs, or *scrubs*, low dwarfy trees.

Si-ci-ly, *p. n.*, a large island south of Italy; 180 miles from east to west, 120 miles broad at broadest; pop., over two millions; belongs to Italy.

sil-i-cate, *n.*, salts in which flint is the chief part.

sim-ple-ton, *n.*, a simple person; of weak intellect or little sense.

Skap-tar Jo-kull, *p. n.*, a volcanic mountain of Iceland, one of a chain of many peaks, of which Hecla is the most noted.

skate, *n.*, shoe-soles of wood with a steel bar along the middle, for gliding over ice.

skel-e-ton, *n.*, lit. a *dried-up body;* the bones of man or of creatures.

sketch, *n.*, a drawing, outline, or draft done *off hand on the spot.*

skew-er, *n.*, a pin of wood or iron to keep meat in right form while cooking.

slag, *n.*, lit. what is *cast off;* dross, cinders of lava, metals, &c.

slope, *n.*, a place down which a person may *slip.*

slouch, *v.*, to *hang down loosely;* to walk with the limbs loose and bent.

small-arms, *n. pl.*, muskets, &c.

smart-mon-ey, *n.*, money one *smarts* to pay to get out of trouble.

smut, *n.*, a slang word for *snout.*

Snow-don, *p. n.*, highest mountain of Wales, Carnarvonshire, 3,571 feet high.

so-ci-a-ble, *a.*, fond of *society.*

sooth-ing, *a.*, calming, pleasing by *sweetness.*

sound, *n.*, *what may be swum across;* a narrow passage of the sea.

spark-le, *v.*, to shine in *sparks.*

spe-ci-fic, *a.*, of a species, or division of a *genus* (see GENERIC).

spies, *n. pl.*, persons sent to *see;* a secret watcher and reporter.

spi-rit, *n.*, the soul (from the *breath*, which is our *life*).

Spits-berg-en, *p. n.*, *the peak-hilled:* name of several islands north of Europe, one of them the farthest north European land.

sprat, *n.*, lit. a *sprout;* a very small sea-fish like the herring.

squad-ron, *n.*, lit. a square of soldiers (horse); here, swift-moving hosts.

squat-ter, *n.*, one who settles on land in the colonies, without buying it.

sta-ble, *n.*, a place where horses or cattle *stand.*

Staf-ford-shire, *p. n.*, an inland English shire; population, 650,000.

stam-mer, *v.*, to stutter or *stagger* in speaking.

stand-ard, *n.*, a flag which *stands* where the king is, on his castles, &c.; a flag of an army or regiment.

star-board, *n.*, the *steering side,* the right from the stern, as *larboard* is the *left side.*

stare, *n.*, the starling.

star-va-tion, *n.*, *dying* of hunger or cold.

staved, *a.*, with *the staves* driven in (of a barrel).

steer, *v.*, to *stir* or *move;* to guide a ship.

stern, *n.*, the *steering place* in a ship; the hinder part.

Stone-henge, *p. n.*, a circle, &c., of immense stones, raised for religious rites by the Druids; age great, but unknown; on Salisbury Plains, Wilts.

strand, *v.*, to get on the *strand* or *beach.*

strag-gle, *v.*, to stray; to stretch widely; to be scattered.

strath, *n.*, a broad valley, with a river running through it. (Scotch word).

Strath-more, *p. n.*, the *great valley.* A great fertile tract

in Scotland, lying south of the Grampians.

strike, *v.*, to lower a flag as sign of surrender.

stum-ble, *v.*, to *trip the feet on anything.*

stump-liz-ard, *n.*, an Australian lizard: the lizard is a reptile called *lizard* from having legs *like arms.*

stun, *v.*, to *stupefy;* to make senseless by *astonishment,* by noise, or blow.

sub-si-dy, *n.*, payment in money; at first, troops held in reserve *under shelter,* to aid in case of need.

sub-sis-tence, *n.*, a living, what *supports* one.

sub-ter-ra-ne-an, *a.*, *underground.*

suburbs, *n.*, the outlying streets of a town; the parts near a town or city.

suc-cess-ful, *a.*, victorious.

suc-cour, *n.*, a *running toward* (to help), aid.

sug-gest, *v.*, to *bear in* (on the thoughts) as if from *under;* to hint, to prompt.

sul-phur, *n.*, a yellow mineral exhaling from volcanoes, but found in combination with metals, &c., very widely.

sum-mon, *v.*, to *warn secretly,* to command to appear.

su-per-sti-tious, *a.*, *addicted to excess* in fear or wonder in religious things; scrupulous beyond need or reason.

sur-mount, *v.*, to *mount above.*

sur-pass, *v.*, to *pass beyond,* to excel.

sur-ren-der, *v.*, to yield, or *render over.*

sur-vi-vor, *n.*, one who lives after another.

sus-pend, *v.*, to *hang down from,* or *by.*

sus-pi-cion, *n.*, lit. *the looking under* (to see if all be right); distrust.

Suth-er-land-shire, *p. n.*, the shire of the *Sutherlands:* a large county in the north of Scotland.

sweet-heart, *n.*, one dearly loved.

Swit-zer-land, *p. n.*, land of the Switzers, Europe; a republic; not quite a third as large as England. Population, two and a quarter millions. The Alps form a large part of it.

swiv-el, *n.*, a small cannon that *swings* or turns round on a pivot.

Tal-mud, *n.*, the collection of Jewish comments of the sacred law, from *Instruction.*

tawn-y, *a.*, of the colour of *tanned* leather; yellow.

Tay, *p. n.*, a Scotch river, falls into the German Ocean below Dundee.

ten-ant, *n.*, one *holding* a house or land from another; an occupier.

Te-rah, *p. n.*, the *wanderer.* Father of Abraham.

Thames, *p. n.*, largest river in England; 215 miles long. London is on it.

thim-ble, *n.*, a cover for the thumb or other *sewing* finger.

thirst, *v.*, to be dry, to crave to drink, to crave anything.

tho-rax, *n.*, lit. a *breastplate;* the chest.

thrill, *v.*, to *drill,* to pierce, to go through one, so as to excite and move him greatly.

tick-le, *v.*, to please, as by a light touch which makes one laugh.

till-er, *n.*, the *handle* or wheel for turning the helm.

Ti-tus, *p. n.*, Roman Emperor,

son of Vespasian. Born, A.D. 40; died, A.D. 81.

tor-ment-or, *n.*, torturer; one who causes torment or *writhing pains* of agony.

train-oil, *n.*, oil *drawn* from whale blubber.

trans-lu-cent, *a.*, *that lets light through.*

trans-port, *v.*, to *carry over* the sea (used of criminals, goods, &c.); to *carry beyond* themselves by passion or pleasure. *n.*, a vessel for carrying troops or government stores.

treach-e-rous, *a.*, *traitorous*, faithless.

treas-ure, *n.*, *what is heaped up;* hence, what is precious.

trem-u-lous, *a.*, trembling.

trop-ics, *n.pl.*, the regions north and south of the equator, at whose limits the sun appears to *turn*, after sinking to its lowest, north and south; the warm parts of the earth.

trow, *v.*, to hold as *true*, to believe.

tru-ant, *n.*, a *wanderer* or *vagabond;* a boy who is absent without excuse from school.

trund-le-bed, *n.*, a low bed on wheels or *trundles*, which can be *trundled* below another through the day.

tu-ber-cle, *n.*, little *tuber* or swelling.

tu-i-tion, *n.*, a *looking after*, teaching, training.

twit-ter-ing, *p. p.*, making quick slight trembling sounds.

ty-rant, *n.*, a *ruler*, a despot.

Ulls-wa-ter, *p. n.*, an English lake, nine miles long, one broad; between counties of Westmoreland and Cumberland.

un-der-mine, *v.*, to *mine* or dig out what is *under* anything.

un-dis-mayed, *a.*, *not deprived of power* by terror, not afraid.

un-du-late, *v.*, to move like *a wave.*

un-for-tu-nate, *a.*, not fortunate.

un-furl, *v.*, to loose from furls, or rolls (as a sail); *furl* is the *bundle* into which a sail is rolled up.

un-grate-ful, *a.*, thankless.

u-ni-ver-sal, *a.*, all embracing; lit. *all turning round*, or *to, one centre.*

un-mind-ful, *a.*, careless.

un-min-gled, *a.*, unmixed.

un-twist, *v.*, to untwine.

ur-gen-cy, *n.*, pressing with earnestness; forcible.

ush-er, *n.*, a *doorkeeper*, an under teacher.

val-i-ant-ly, *adv.*, in a *strong*, brave way.

vane, *n.*, lit. a *cloth* banner; weathercocks, emblems, &c., or other metal ornaments on spires, formerly used on masts of ships.

va-ri-e-gate, *v.*, to *make different*, of various colours.

vas-sal, *n.*, a *servant* (holding land from his lord, on condition of military service).

vat, *n.*, a large *vessel* or tank.

ven-o-mous, *a.*, full of *venom*, poisonous.

ve-ran-dah, *n.*, an open-roofed structure for shade, &c., *coming up* against a house.

ves-i-cle, *n.*, small vessel.

Ve-su-vi-us, *p. n.*, a burning mountain, eight miles from Naples, in Italy, 3,950 feet high.

vic-to-ri-ous, *a.*, having gained a *victory.*

vine-yard, *n.*, a yard or field planted with grape vines.

vi-o-lent-ly, *adv.*, with *rough force.*

vol-ca-no, *n.*, a mountain sending forth, from time to time, steam, fire, ashes, lava, &c., as if it were the forge of *Vulcan*, the god of fire.

vol-ley, *n.*, *a flight* of shot, many at a time.

vol-un-teer, *n.*, one who joins an enterprise *of his own pleasure.*

vor-a-cious, *a.*, *eager to devour*, greedy.

wake-rob-in, *n.*, a wild plant, called also cuckoo-fruit, and lords and ladies.

ward, *v.*, to *guard*, to *wait on*, as protector.

watch-man, *n.*, a man who watches, a policeman.

Wa-ter-loo, *p. n.*, a village in Belgium, ten miles from Brussels; battle fought there, June 18, 1815. Napoleon utterly defeated by Wellington.

Weiss-horn, *p. n.*, a high mountain in the Swiss Alps.

Wel-ling-ton Col-lege, at Sandhurst, Berkshire, opened 1859, for orphans of soldiers. Named after Wellington.

We-ser, *p. n.*, a German river, 260 miles long. Falls into North Sea.

Wes-sex, *p. n.*, *West Saxony*, an ancient British kingdom stretching from Land's-end to Sussex, or South Saxony.

Will-i-am, Nor-man, Duke of Normandy. Born 1027; invaded England when 39; died 1087, thrown from his horse at Rouen, in France.

Win-der-mere, *p. n.*, the largest English lake, fifteen miles long from north to south, one mile broad on an average. In Westmoreland.

wine of bless-ing, wine cup drunk after a Jewish meal on Sabbath (Saturday) evening, with thanks to God for the Sabbath.

wreck, *v.*, to *break up* (of a ship, &c.)

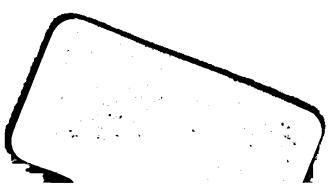
wrig-gle, *v.*, to *twist to and fro.*

yard-arm, *n.*, the half of a ship's yard (or beam from which the sail hangs), from the mast out.

York, *p. n.*, capital of Yorkshire. with a great minster. Pop., 40,000.

zeal-ous, *a.*, full of zeal, earnest, enthusiastic.

zig-zag, *a.*, in short sharp turns, like the letter Z.

THE END.

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